



# International Abstract of Surgery

SUPPLEMENTARY TO

Surgery, Gynecology and Obstetrics

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Volume XLVIII

January to June 1929

PUBLISHED BY

THE SURGICAL PUBLISHING COMPANY OF CHICAGO

54 EAST ERIE STREET CHICAGO

1929

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JANUARY 1929

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*Supplementary to*  
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Editorial Communications Should Be Sent to Franklin H. Martin, Editor, 54 East Erie St., Chicago  
Editorial and Business Offices: 54 East Erie St., Chicago, Illinois, U. S. A.  
Publishers for Great Britain: D. Appleton, Tindall & Cox, 8 Henrietta St., Covent Garden, London, W. C.



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## EDITOR'S COMMENT

A NUMBER of unusually interesting and important papers concerning various pathological conditions in the gastro intestinal tract are reviewed in this month's issue of the INTERNATIONAL ABSTRACT OF SURGERY. Hurst, Turner, and Venables' clear cut presentation of the disease picture of cancer of the colon in its early stages (p. 33) emphasizes live symptoms as being constantly present—abdominal discomfort or pain and a change in the habitual action of the bowels. A symptom of particular significance is the presence of a colicky pain which disappears with a gurgle which can be seen and felt. The presence of the first two symptoms suggests at once the necessity for a careful search for blood. In the authors' experience occult blood is present in almost all specimens in every case of cancer of the stomach and cancer of the colon; it is found rarely in uncomplicated cases of diverticulitis and never in constipation or diarrhea unaccompanied by organic disease.

In a discussion of the same subject before the Royal Society of Medicine (p. 34) Wheeler calls attention to the fact that carcinoma of the colon can cause dyspeptic symptoms—painful peristalsis of the colon or pyloric spasm immediately after taking food—and thereby lead the surgeon to concentrate his attention on the upper abdomen with the result that a colonic growth which might be detected by the sigmoidoscope is overlooked. He advises palpation with the patient in the erect position while searching for growths in the hepatic and splenic flexures. In the roentgenographic search for tumors of the bowel Hodgson (p. 34) recommends the use of the dual exposure. He states that the normal bowel will give a double shadow because of the double peristaltic wave, but in the diseased area there will be but one shadow because peristalsis is absent in this area.

Monsarrat's comprehensive discussion on the surgical treatment of diverticulitis (p. 30) Bolton's thoughtful consideration of the interpretation of gastric symptoms with particular

reference to pain (p. 23), the study of Gatewood and his associates on the development of alkalosis in patients undergoing treatment for peptic ulcer (p. 25), and Judd and Parker's analysis of 137 cases in which anastomosis between the biliary and intestinal tracts was established because of obstructive jaundice (p. 40) are a few other of the many interesting papers concerning surgery of the gastro intestinal tract in this month's issue.

A second subject particularly emphasized in this month's issue by reason of the many helpful and stimulating contributions which concern it is that of tumors and diseases of bone. Coley's discussion of the differential diagnosis of sarcoma of the long bones (p. 62) and the reports of Henderson of three cases of giant-cell tumor of the upper end of the femur (p. 65) of Cotton of a case of giant cell tumor of the spine (p. 65) and of Baranger of two cases of acute osteomyelitis of the spine (p. 64) are of more than usual interest. Coley does not oppose diagnostic biopsy of a bone tumor if a positive diagnosis cannot be made clinically. He believes however it should consist in a complete and thorough curettage down to healthy bone. He emphasizes the difficulty of differentiating certain types of bone tumor from the clinical and roentgenological findings alone—notably in cases of endothelioma and giant cell tumors—and points out the possibility that a chronic osteomyelitis (which may be difficult to differentiate from sarcoma) may exist primarily as an inflammatory process and later become malignant.

Gulke's review of the indications for, and the results of surgical treatment of suppurative meningitis (p. 10) Bagley's experimental study of the effects of blood in the cerebrospinal fluid (p. 16) Pratt's discussion of peripheral nerve complications following certain fractures (p. 15) and McIlraith, Turner, and Hicks' interesting report of a streptococcal infection of the abdomen and chest (p. 21) are a few of many other abstracts deserving careful reading.



# INTERNATIONAL ABSTRACT OF SURGERY

JANUARY 1929

## LANDMARKS IN SURGICAL PROGRESS

By IRVING S. CUTTER, M.D., Sc.D., CHICAGO  
Dean Northwestern University Medical School

### LIGATION OF THE COMMON CAROTID—AMOS TWITCHELL

TO operative surgery the science of medicine is indebted for many early demonstrations of physiological truths. For centuries interference with the circulation to the brain was considered inconsistent with the preservation of brain function and it was not until the latter half of the eighteenth century that observations began to accumulate proving that the function of the brain may be normal following ligation of one of the carotids.

Petit<sup>1</sup> describes the case of a patient with an aneurism at the bifurcation of the right carotid which had undergone spontaneous cure. The patient died of apoplexy seven years afterwards and at autopsy the carotid artery and the tumor sac were found obliterated. He says:

Enfin à la place de la tumeur ci dessus décrite il se trouva un noyau dur oblong gros comme le noyau d'une olive et qui n'avait aucune cavité à l'intérieur.

Hebenstreit<sup>2</sup> in his translation of Benjamin Bell's work on surgery<sup>3</sup> mentions a case in which



AMOS TWITCHELL

the carotid artery was wounded during an operation for the removal of a tumor. The operating surgeon immediately tied the vessel and the patient lived for many years thereafter.

Matthew Baillie<sup>4</sup> in 1789 found in a cadaver at the Windmill Street School an old aneurism of the right carotid which had become completely filled with an organized coagulum. He says:

There was no part of it which had the appearance of being recently formed and there cannot be any doubt of its having existed for a considerable time before the man's death. The whole cavity

being filled up with the coagulum there was no circulation whatever.

Baillie's article is illustrated with a plate showing the carotid tumor completely filled with organized coagulum.

Abernethy<sup>5</sup> John Hunter's pupil and his successor in London ligated the common carotid for hemorrhage in 1798. The patient had been gored by an ox and Abernethy first attempted to ligate the superficial vessels. Finding that the blood still

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flowed he was compelled to tie the common carotid. The patient did not survive and Abernethy reports that the brain was affected.<sup>1</sup> His report says:

Finding that the moment I remitted the pressure on the carotid the blood gushed out from so many orifices and in such a torrent from the bottom of the wound I resolved to pass a ligature round the trunk of the carotid at the part where I had been compressing it and which was about an inch below its division. This ligature I thought might be made to serve as the tourniquet in amputation for I could with it compress the artery so as to prevent the wounded parts becoming obscured by blood and by slackening it I might gain information with regard to the situation of the ruptured vessels. In attempting to secure the carotid artery I passed behind it in the manner described a blunt hook with an even in the point and having previously introduced a ligature into it I drew back the instrument and thus enclosed the artery. When I compressed the vessel by tightening the knot of the ligature I did it slowly and with a watchful attention to the sufferings of the patient. But the compression of the ligature did not seem to make the least difference in the general state of the patient whilst it completely prevented the further effusion of blood.

The patient died approximately thirty hours after the application of the ligature and in describing the postmortem findings Abernethy reports that:

the brain appeared to have suffered a considerable degree of inflammation. The vessels of the pia mater appeared as if they were injected and in many places upon the surface of the convolutions of the cerebrum there even seemed an effusion of blood producing that appearance usually termed as bloodshot. There was a very considerable deposition of gelatinous substance between the tunica arachnoidea and the pia mater. The vessels passing through the substance of the brain though fuller than common were not particularly turgid. A considerable quantity of water of a light brown colour and lightly turbid appearance was found in the ventricles whilst the firmness of the sides of those cavities sufficiently indicated that the collection had not preceded the accident.

A Mr Fleming a British naval surgeon tied the common carotid in 1803 in a patient who had attempted suicide. This patient survived.<sup>2</sup>

On November 1, 1805 Sir Astley Cooper, 1868, 1884, operated for aneurism of the carotid. The patient died but Cooper did not give up hope that the operation under favorable circumstances

might be performed. He was obliged to wait until the successful and brilliant result of a second operation in 1808 proved the feasibility of tying this vessel with safety.<sup>3</sup>

Mason I Cogswell<sup>4</sup> of Hartford Connecticut describes the case of a Mrs L— of Lebanon Connecticut age thirty-eight from whom he removed in November 1803 an extensive tumor involving the left side of her neck extending from the ear to the junction of the clavicle with the sternum. In describing this operation Cogswell says:

I commenced the operation by a crural incision and after separating the skin for there was nothing but skin to separate I had to proceed through every part of the operation with the utmost caution. If the external appearance was unequal the internal was much more so its processes extending themselves beneath almost every muscle and tendon in the neck, hence the extreme difficulty and danger attending the operation and hence the tedious length of an hour to which it was extended. After dissecting around the tumour nearly to its base I called the attention of the gentlemen to the situation of the carotid artery and on a careful examination we found it completely enveloped by the tumour. I immediately laid it bare encircled it with a broad flat ligature tied and divided it about half an inch from the knot. The remaining part of the operation was finished as speedily as was consistent with the safety of our patient and with but little hemorrhage and though extremely feeble she was not faint. On the 6th day from the operation when everything was doing well a slight hemorrhage commenced from one of the anastomosing arteries under the forepart of the jaw which in all probability the slightest compression would have controlled. Dr Watsons resided three miles from her and the messenger had to extend his ride six miles further before finding him and although the hemorrhage was moderate yet so much time had elapsed before the arrival of the Doctor that the loss of blood was more than she could sustain in her feeble state and she died a short time after. The circumstances attending this case were such as entirely to establish the practicability and safety of dividing the carotid artery on the living subject.<sup>5</sup>

Amos Twitchell who had graduated in medicine under Nathan Smith<sup>6</sup> at Dartmouth was called upon in October 1807 during his second year of medical practice to ligate the common carotid for secondary hemorrhage. Twitchell was twenty six years of age at the time and had been passing through a severe starvation period of medical

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practice at Norwich Vermont Encouraged by his mentor to persevere he had decided to move to Marlborough New Hampshire when he was called to attend what proved to be his most famous case His report was not published until 1843 when it appeared in the first volume of the short lived New England Quarterly Journal of Medicine and Surgery<sup>1</sup> Twitchell's report was sent to the editors of the Journal by George C Shattuck Jr the son of George Cheyne Shattuck M D , who had been a schoolmate of Twitchell's at Dartmouth<sup>2</sup>

Twitchell according to his own statement was ignorant of antecedent ligations of the carotid The general voice of surgery was against such a procedure Had he read the report of Abernethy's case he could have held but little hope for his patient's recovery This report typifies the re-

sourceful young surgeon who was willing to contravene accepted surgical principles in the hope that life might be preserved The report itself is modest in the extreme Subsequent to the ligation Twitchell's patient made an uneventful recovery

Amos Twitchell was born April 14 1751 in the shadow of old Monadnock Mountain of the Great Spout The village of his birth Dublin nestles among the beautiful hills of southern New Hampshire In 1798 when seventeen years of age he entered Dartmouth College graduating A B in 1801 A M and M B in 1805 After two years of practice at Norwich Vermont, he removed to Marlborough New Hampshire thence in 1810 to Keene New Hampshire where his death occurred May 6 1850 He was easily the leading surgeon in middle New England performing all of the major surgical operations of the day noted for his modesty his quiet home life<sup>3</sup> and his intense devotion to surgery Numerous calls to accept professorships in medical schools were declined because of his active practice Among his surgical achievements may be mentioned trephining of the tibia for abscess in the bone<sup>4</sup>

# ABSTRACTS OF CURRENT LITERATURE

## SURGERY OF THE HEAD AND NECK

### HEAD

Gloja F. Various Methods of Repairing Wounds of the Skull and the Report of a Case of Extensive Cranioplasty by Means of an Autoplastic Osteoperiosteal Flap from the Tibia (Unn guardo ai vari procedimenti di chiusura di breccie craniche e con illustrazioni intorno ad un caso di estesa cranioplastica mediante innesto osteo periosteico autogeno dalla tibia) *Arch ital di chir* 1928 xvi 157

Gloja first reviews the literature on cranioplasty. Defects in the bones of the skull have been repaired with metallic plates, ivory, celluloid, rubber, dead sterilized bone, decalcified bone, calcium pastes, cartilage and osteoplastic flaps. The best results have been obtained by autoplasmic bone grafting.

The case reported by the author was that of a man thirty-two years of age who sustained a fracture of the skull and an injury of the cerebral cortex involving the speech center as the result of being struck in the left temporoparietal region by the handle of a piece of machinery. The roentgenogram showed an extensive fracture with bits of bone buried in the bone cortex. On account of objections to surgical intervention on the part of the patient's family, operation was delayed until nine days after the accident. The patient was then apyretic and wound healing had begun. In the first operation the margins of the wound were freshened and the bone fragments removed from the brain. Five days later the opening in the skull was repaired with an osteoperiosteal flap from the tibia. The operations were performed under novocain anesthesia and complaint of pain was made only when the periosteum was incised.

Six months after the operation the patient showed some aphasia and slight paresis of the inferior facial and hypoglossal nerves. The aphasia was decreasing, however, and he had returned to his work.

In discussing loss of substance of the skull before the Public Health Service, Tuffier, Faure and Morestin agreed that persons subjected to cranioplasty rarely recover completely normal function and are therefore entitled to some compensation. They agreed also that it is often impossible to tell the exact degree of the bone lesion for one or more years after the operation. **AUDREY C. MORGAN, M.D.**

Huet P. C. Recent Fractures of the Nose (Fra tures récentes du nez) *J de chir* 1928 xxvi 649

Three pathognomonic signs of fracture of the nose are nasal deformity, traumatic subcutaneous emphysema of the nose, and hematoma of the septum.

The object of treatment of nasal fractures is to restore not only the form of the nose but also the permeability of the fossæ. The treatment must be given early because fractures of the nose become consolidated in from five to ten days. Unnecessary pressure on the delicate mucous membrane must be avoided. As a rule, reduction of the fracture and tamponing are sufficient. If the mucous membrane has been torn, the nasal fossæ must be kept under observation after the removal of the tampon. If adhesions form, they should be destroyed by diathermic coagulation as they may undergo atypical retraction and deform the bridge of the nose or interfere with permeability. In cases of fracture associated with marked displacement and especially those with luxation of the quadrangular cartilage, the fixation must be maintained for some time. When tamponing alone is maintained for a long time, it tends to spread the vault and widen the bridge of the nose. This tendency must therefore be overcome by the use of some form of external fixation in addition to the tampon. The author employs a simple apparatus resembling a saddle of copper which fits over the nose and is kept in place by a band of adhesive tape applied horizontally and another band applied vertically from the forehead. A thin layer of cotton is placed beneath it to protect the skin. Martin prefers intranasal prostheses and those he has designed are extremely ingenious, but in the author's opinion they are not necessary in simple cases.

In complicated cases, particularly those in which the fracture irritates to the superior maxilla and the vault of the palate, a point of support must be found outside the nose. Darcis obtains such a point by applying an aviator's helmet of plaster. In very complicated cases, a system of plate levers may be attached to this helmet to furnish intranasal, extranasal or maxillo-facial prostheses as desired.

The article contains illustrations showing the different types of fracture of the nose.

**AUDREY C. MORGAN, M.D.**

Terracol J. Osteomyelitis of the Superior Maxilla in the Nursing Infant (L'ostéomyélite du maxillaire supérieur chez le nourrisson) *Arch inter de laryngol* 1928 xxiv 32

The author first reviews the embryology of the maxillary sinus and its anatomy in the newborn infant.

He states that osteomyelitis of the superior maxilla in the infant is rare. Fanzel found 7 cases among

15 000 patients Terracol has seen only 2 cases. He believes that as a rule the portal of entry of the infection is the mouth but that in some cases may be the antrum. According to Broca the zone of growth of the teeth plays a part similar to that played by the epiphyseal cartilage in the long bones. The gingivitis associated with eruption of the teeth is followed by folliculitis and the folliculitis by osteitis the whole bone soon becoming involved.

In the beginning the child may cry and refuse to nurse but there are no localizing signs. Soon however there is a unilateral swelling of the face associated frequently with closure of the eye infiltration of the eyelid and chemosis. The skin of the jaw becomes red and the veins dilate. Occasionally the inflammation suggests erysipelas. Palpation is very painful and the tissues are hot and hard. There is a marked contrast between the half of the palate that is normal and the half that is swollen. Fluctuation is soon noted and a fistula may form at the edge of the tooth socket at the inner angle of the eye or in the edge of the orbit. If it is formed at the edge of the tooth socket the germ of the tooth may be expelled. Frequently two teeth are lost the canine and the premolar. The fistula rarely forms in the vault of the palate. There is always a nasal discharge.

As in other forms of osteomyelitis the acute phase is succeeded by a chronic phase. Pus and sequestra are discharged and probing reveals denuded bone. Feeding is difficult because it is painful and the osteomyelitis may be followed by septicæmia with multiple visceral localizations.

Operation should be performed as soon as the diagnosis is made. The principles to be followed are the same as for osteomyelitis elsewhere—incision of the soft parts and trephining of the bone. If a fistula has already formed the skin opening should be enlarged the bone curetted fungosities or sequestra removed and drainage established. If a fistula has not formed the operation should be performed through the mouth in order that disfigurement may be avoided. Without any anaesthesia or with only slight infiltration of the mucous membrane with 1 per cent novocain an incision should be made down to the bone and the bone trephined and curetted. The operation should be performed rapidly. Care must be taken not to curette too deeply as it is impossible to tell the exact extent of the lesion in young spongy bone and there is danger of bringing about a blood infection. After the curettage the wall should be touched with a weak solution of zinc chloride and the cavity drained. Drainage may be made through the nose. Some times further collections of pus are formed. These are especially apt to occur beneath the orbit and must be incised. Cicatrization should be slow and should occur from the bottom of the wound toward the surface. Vaccines may be used as a supplement to the operative measures. The late results are good.

In all of Broca's cases the face remained perfectly symmetrical. The vault of the palate and the nasal fossæ also remained normal in shape but as the

teeth corresponding to the expelled tooth germs were lacking a prosthesis was necessary later.

AUDREY G. MORGAN M.D.

## EYE

Duke Elder W. S. Ultraviolet Light in the Treatment of Ophthalmic Disease. *Brit J Ophth* 1928 xii 289

This article is a report of the results obtained in 425 cases of ophthalmic disease which were treated by general and local phototherapy at the Royal London Ophthalmic Hospital.

Clinically the most obvious effect of radiation is the production of an erythema in the skin an increase in the bactericidal power of the blood a slight erythrocytosis an increase in the hæmoglobin and platelets a decrease in the polymorphonuclear cells and an increase in the lymphocytes eosinophiles calcium phosphorus and iron.

The great majority of cases respond within a reasonably narrow margin but the site of the lesion and the individual variation of each patient render a routine dosage based on a standard test inexpedient and unsafe. The best basis for dosage is the erythema of the skin and the bactericidal power of the blood which seem to be correlated.

In the treatment the body is divided into three areas the chest and front of the abdomen the back and the legs. Each of these is radiated on alternate sittings the dose being gradually increased. The vapor lamp is used at first and then the carbon arc. Twenty treatments are given and after a rest of from two to three weeks they are repeated if necessary.

Not only the effect on the eye condition but also the general tonic effect is very marked. The patient feels better and stronger gains weight and sleeps better the appetite increases and the general immunity of the body is raised. The most marked improvement is noted in children.

The dangers of the treatment are overdosage and idiosyncrasy of the patient.

Overdosage causes general depression drowsiness fatigue loss of energy and appetite headache nausea irritability and insomnia. Patients with a low blood pressure require smaller doses than others and show the signs of overdosage quickly. The presence of a fever is a contra indication to the treatment. During menstruation the doses must be reduced if signs of overdosage appear.

An erythema of high degree is associated with more discomfort than danger healing occurs without scarring. No sequelæ such as follow X ray dermatitis have been reported. There is no danger of epithelioma despite the finding of active mitosis in the basal layers of the skin.

The eyes should be protected at all times because the ultraviolet light may cause a painful photophthalmia scotomata cataract or conjunctivitis.

The effects of ultraviolet light treatment are best demonstrated in the chronic and intractable cases of

iridocyclitis. The pain is relieved, the eye becomes white, corneal precipitates clear up, pupillary adhesions break, the vitreous clears and vision improves. In tuberculosis the average response is good, but in syphilis the response is always poor.

The author believes that most failures of the treatment are due to excessive dosage. In the cases of choroiditis, scleritis and keratitis reviewed, the results were generally good even when the condition was severe and chronic. In the cases of interstitial keratitis the ultraviolet light was of no benefit except that it exerted a tonic effect on the general health. Corneal ulcers responded better to local irradiation than to the general light baths. No improvement was noted in corneal opacities. Recurrent hordeola, tuberculous dacryocystitis and the conjunctivitis associated with debilitating disease curvata and have never reacted well to general light treatment. *ARTHUR W. COTT, M.D.*

**Barkan, O.** Cloquet's Canal Visible in the Living with Observations of Hemorrhage into Cloquet's Canal. *Arch Ophthalmol* 1928 16: 302

Barkan reports a case in which examination revealed a translucent cylindrical canal with a wide anterior end lying behind the posterior lens surface and running backward to the lower portion of the optic disk. No vestige of fetal elements could be discerned. He reports also two cases of hemorrhage into Cloquet's canal. *ARTHUR W. COTT, M.D.*

**Tassman, I. S.** The Lecitins of the Lens and Their Chemical Changes in the Pathogenesis of Senile Cataract. *Arch Ophthalmol* 1928 16: 361

While many new studies on cataract have been made in recent years, there is still much to be learned regarding the various chemical changes taking place in the proteins of the lens. It is now known, however, that the total proteins constitute about 35 per cent of the lens mass and consist of a soluble and an insoluble portion. The soluble portion makes up 52 per cent of the total mass, and the insoluble portion 48 per cent. The soluble portion contains alpha crystallin, beta crystallin and an albumin. The alpha crystallin forms 37 per cent, the beta crystallin 63 per cent and the albumin 1 per cent of the soluble protein. The alpha crystallin is found mainly in the external or cortical part of the lens and the beta crystallin mostly in the more central part. The albumin shows no noticeable distribution. The insoluble protein or framework is found to increase from within outward.

Lens proteins like other proteins yield a positive reaction with sodium nitroprusside and ammonia. In this reaction the beta crystallin is stronger than the alpha crystallin and the insoluble albuminoid is negative. The reaction is said to depend upon the presence of cysteine. Its intensity decreases as the two crystallins vanish from the lens until in mature cataracts it becomes entirely absent. This seems to suggest that opacities follow a reduction of the soluble crystallins, but our knowledge regarding the

relationship of the chemical changes in the proteins of the lens to the pathogenesis of senile cataract is still incomplete. *CHARLES R. McALLISTER, M.D.*

## NOSE AND SINUSES

**Glover, J. A.** Some Observations on Nasopharyngeal Epidemics in Public Schools. *Proc Roy Soc Med Lond* 1928 XXX 1393

Glover states that over 80 per cent of the illnesses occurring in school children are transmitted by droplet infection. He believes that some of the increase of sickness in the public schools is apparent rather than real, being explained by greater attention to minor febricula. The true increase he attributes to the increased prevalence of influenza the aftermath of the great epidemic of 1918 and the increased demand for public school education which has led to overcrowding.

The most common droplet infections are influenza, feverish colds, chills, pyrexias of unknown origin and tonsillitis. The regular infectious diseases are comparatively infrequent. The author discusses the incidence, bacteriological findings and incidence of pneumonia, otitis media and tonsillitis.

In the prophylaxis vaccines are uncertain. There is some evidence, however, that they may diminish the incidence of complications. If used they should be administered before the danger period is not later than November.

Intensive prophylaxis other than the use of vaccines should include: (1) special efforts to prevent children from returning to school after the holidays infected with influenza or febricula; (2) records of the temperature for three weeks after their return; (3) immediate isolation of all children with pyrexia and catarrh; (4) the forbidding of work before breakfast for at least the first six weeks of the term; (5) a rule that all hot baths and showers taken during the day or after games should be followed by a cold shower; (6) the prevention of chilling during games; and (7) increased provision for dry clothing.

Infection takes place mainly in sleeping quarters. Therefore proper springing out of the beds and thorough cross-ventilation in dormitories are of paramount importance. The author cites instances of cross infection due to the proximity of beds and reviews the standards of wall space, floor space and cubic space laid down by the Royal Commission Board of Education.

## NECK

**Mosser, W. B.** The Effect of Iodine and Thyroid Feeding on the Thyroid Gland. An Experimental Study. *Surg Gynecol Obst* 1928 45: 111

Mosser studied the effects of iodine and thyroid feeding on the thyroid gland in three groups of dogs.

In the experiments on the first group, 10 minims of Lugol's solution were fed for six weeks and specimens of the thyroid were taken just before and after

the feeding and again several months after the termination of the feeding

In the experiments on the second group, thyroid extract was fed in increasing quantities until signs of hyperthyroidism appeared and iodine was then given for six weeks. Specimens of the thyroid gland were obtained before and after the thyroid feeding at the end of the iodine period and three months later.

In the experiments on the third group, thyroid extract was given as in those on the second group and continued during the six weeks of iodine medication.

The specimens of the first group obtained after the iodine feeding showed distortion of the acini by colloid and distinct flattening of the cell lining. The same changes were found in the sections removed several months later.

The pictures in the second and third group were identical. The sections removed after the termination of the thyroid feeding were similar to those in Group 1 after iodine feeding and after the subsequent iodine period the findings were still practically unchanged. Three months later the colloid was diminished, the cells were granular and the cytoplasm was vacuolated, changes interpreted as indicating exhaustion. Similar observations can be made in patients who have received iodine for a prolonged period.

The author advances the theory that iodine stimulates the thyroid to greater colloid production which flattens the cells and temporarily decreases thyroxin production (clinical improvement) that on prolonged medication the cells re-adjust themselves and the production of thyroxin is resumed and that finally in the state of exhaustion the cells disintegrate though they still continue to produce thyroxin.

F. S. MODERN, M.D.

Doederlein, G. Experimental Hyperthyroidism and its Effect on the Reproductive Function and the Progeny (Experimenteller Hyperthyroidismus und seine Wirkung auf Fortpflanzung und Nachkommenschaft). *Arch. f. Gynaek.* 1918, CXXXIII, 608.

The author states that in addition to the local mechanical conditions for fertilization and for preservation of the developing embryo the normal course of the processes of reproduction is dependent upon a number of extragenital factors. Among exogenic factors of importance in embryological development are climate (seasonal limitation of fertility in the polar regions, etc.), nutrition (over nourishment under nourishment, lack of vitamins), poisons (alcoholism) and infectious diseases (typhoid fever, malaria, etc.). Chief among the endogenic factors is the function of the endocrine glands. The directly stimulating influence of the suprarenal in the regulation of spermatogenesis and of the hypophysis on ovarian function are well known. Less easily understood are the relations between the thyroid and the germinal organs. Hyperfunction (Basedow's disease) and hypofunction (myxedema, thyroidectomy) decrease fertility.

According to Scybrides, hyperthyroidism has the same effect, but the influence of hypofunction or extirpation of the thymus has not been determined. The relation of the parathyroids, the epiphyses and the pancreas on reproduction is also unknown.

Experimental study carried on by the usual methods of resection or extirpation on the one hand and transplantation of the different endocrine organs on the other has failed in many directions, partly because the operative removal was neutralized by the presence of accessory organs or was followed by the death of the experimental animal and partly because—with the exception of the germinal organs themselves—the specific influence of the transplanted organ ceased with the transplantation. As the result of the recent successful preparation of certain hormones in pure form, especially the hormone of the thyroid, it is now possible even if the full effect of the living organ is not attained to determine at least partially the qualitative and quantitative effect of the different secretions on the processes of reproduction. Despite the variation in the sensitivity of different animals, even those of the same species to the injection of these preparations it is nevertheless possible to control the specific effect by proper dosage.

Through the mating of animals with differing grades of hyperthyroidism, Doederlein sought to determine the effect of hyperthyroidism upon the capacity for fertilizing and conceiving, the course of pregnancy and labor, the number and character of the progeny and the reversibility of the hyperthyroid state. Guinea pigs were chosen for these investigations because of the length of their period of gestation—sixty-five days—which allowed longer continued administration of small doses than would have been possible in the cases of rabbits whose gestation period is only thirty days. As a rule from 0.05 to 0.1 gm. of thyroïdin was administered every two days but sometimes daily by means of a glass tube introduced into the pharynx. During the period of observation the animals were given a diet particularly rich in vitamins and the body weights and the carbon dioxide content of the expired air were recorded. The observations were made on sixty animals, some of which were under study for as long as ten months.

Control studies of untreated animals showed in both sexes a temporary decrease in the body weight with an initial decrease and subsequent increase in the carbon dioxide production during the periods of increased sexual activity. In the case of pregnant animals they revealed a decided increase in the body weight with marked variations in the production of carbon dioxide during the second half of pregnancy and an increase in the carbon dioxide production during the last weeks corresponding to the increased demands of the developing fetus and the excretion of the products of fetal metabolism by the mother.

An increase in the dosage of thyroïdin caused a rapid decrease in weight and later intensified oxidation with increased excretion of carbon dioxide.

When the increase in the excretion of carbon dioxide amounted to about 50 per cent the induced hyperthyroidism was regarded as of medium severe grade. A male guinea pig which was given doses sufficient to produce this condition for seventeen days proved to be infertile having been observed in successful copulation with two females who were later immediately impregnated by untreated males. In the case of this male and those of two other males treated in the same way the decrease in the excretion of carbon dioxide which is characteristic of normal animals during the period of heightened sexual activity was absent. When the administration of thyrolin was stopped conditions returned to normal proving that the injury to the sexual function caused by hyperthyroidism is reversible.

The author concludes that hyperthyroidism in the male is capable of injuring the reproductive function leading either to infertility or to the begetting of physically weak offspring.

In the case of female animals the effect of the thyrolin was even more pronounced, half the amount resulting in about the same increase in carbon dioxide excretion as was produced by the full amount in males. The power of conception however was not decreased. When the male had not received the treatment the young were born with mild hyperthyroidism. When the male also had been treated the young died soon after birth but in these cases it appeared that thyroid hormone reached the fetus displacentally from the mother.

Continued treatment with large doses led to failure of conception whereas after the administration of thyrolin was discontinued the female conceived immediately upon being paired with the same male. Continuation of the medication during pregnancy resulted in abortion or if the gestation was continued to term in a high puerperal mortality.

These experiments demonstrate that the offspring of hyperthyroid mothers are born with an increased thyroid function but that as in the case of the parent animals this hyperthyroidism which arises during intra uterine life is reversible. A lasting injury to the progeny by the artificially induced hyperthyroidism is therefore to be excluded. If the mother with Basedow's disease bears young with the same condition a parathyroid aplasia affecting the germ plasma is at work.

In conclusion the author states that on account of the other injurious effects of large doses of thyrolin hormonal sterilization by means of the fertility limiting effect of this preparation is impractical but that a combination of thyrolin with pancreatic or follicular hormone might prove of value. FLEISCH (G)

**Brown R G.** Some Varieties of Skin Flaps in Connection with Cases of Total and Hemilaryngectomies. *Proc Roy Soc Med Lond* 1925 xx 1566

The author reports three cases in which laryngectomy was performed with his improved technique.

In total laryngectomy a quadrilateral skin flap with inclusion of the platysma fibers was used with excellent results.

In the preliminary tracheotomy for total laryngectomy a skin flap was slid deep down in the neck wound and fixed there by mattress sutures. This procedure gave a cleaner wound.

In a case of complete postlaryngeal stenosis of the larynx the author reconstructed the larynx. First he performed a hemilaryngectomy in order to get rid of the scar tissue by turning in a skin flap and two months later he covered the anterior wall with slide flaps. A good result was obtained.

MANFORD R. WALTEZ, M.D.

# SURGERY OF THE NERVOUS SYSTEM

## BRAIN AND ITS COVERINGS CRANIAL NERVES

- Eckert J L The Aftermath of Head Injuries  
*N York State J M* 1928 xxviii 774  
Peet M M Discussion—The Aftermath of Head Injuries  
*N York State J M* 1928 xxviii 777

ECKERT states that traumatic epilepsy develops in about 5 per cent of cases of severe head injury. It is claimed by many that the determining factor is a hereditary or constitutional predisposition to nervous instability and there seems to be abundant evidence that the predisposition is more important than the injury itself. It is doubtful if epilepsy ever occurs following a head injury except when such a predisposition exists.

No conclusive case of brain tumor following a head injury has been reported.

In syphilis of the central nervous system the lightening up or aggravation of symptoms must occur within a few days after the injury to have any causal relationship to it.

True delayed traumatic epilepsy shows some symptoms directly after the injury and develops within ten days. Traumatic meningitis may follow a skull fracture within a period ranging from days to months.

The rôle of trauma as a cause of definite mental disease is debatable.

The symptoms of functional nervous disorders appear after a few days or weeks. They are usually classed as traumatic neurasthenia, traumatic neurosis or traumatic hysteria. As the complaints are the same regardless of the patient's age or race or the degree of the injury, Dyke designates the clinical picture in these cases as the "head wound syndrome." The symptoms are headache and dizziness, irritability, apathy, fatigue and ear noises followed later by tremor, vasomotor flushing, palpitation, abnormalities in the gait and numbness. In some cases palsy or hemianesthesia develops. There appears to be an inverse relationship between the severity of the symptoms and the injury. As a rule the patient is of a neurotic make up. Some of the worst cases are the result of fear alone.

In addition to the usual careful neurological tests including examination of the eye grounds and spinal fluid, X-ray examination and encephalography are indicated to determine the presence of organic disease. When organic injury is found it is usually impossible to modify the signs unless they are produced by a condition which can be relieved by surgical or medicinal measures. In cases with no organic signs the true nature of the condition should be explained to the patient and an effort made to obtain early compensation for the injury.

If the patient receives compensation early many later symptoms may be avoided. Additional aids in the treatment are suggestion, electricity, massage and heat. The patient should be encouraged to work. If individual attention and care are given to each case, nearly all such patients can be restored to relatively normal health.

PEET also accepts the theory that in many cases the attack of epilepsy is the cause of the head injury rather than the reverse. He states that the question of brain tumor as a result of injury is still an open one as a number of tumors have been found immediately beneath an area of old trauma.

MAURICE MEYERS M D

Rio Hortega P The Histological Structure of the Pineal Gland (Constitución histológica de la glándula pineal) *Prog de la dis* Madrid 1928 xvi 178

The author has examined the pineal glands of children, adolescents and adults and the pineal glands of cattle. The report of his findings is supplemented by numerous photomicrographs.

Various investigators have described three kinds of cells in the pineal gland—nerve cells, neuroglia cells and pineal or specific parenchymatous cells—but the author found only neuroglia and parenchymatous cells and concludes that there are few if any true nerve cells. He states that the lobules of the gland are made up of the specific parenchymatous cells which constitute the greater part of the gland and a smaller number of neuroglia cells scattered among the parenchymatous cells. The parenchymatous cells are stellate with smooth flexible processes which divide and frequently end in key-shaped enlargements at the edge of the lobules or at the end of the adventitia of the vessels.

The neuroglia cells are like the astrocytes of neuroglia elsewhere; they stain in the same way and generally show filiform processes with implantation on the vessels. The amount of neuroglia differs greatly in different individuals even under normal conditions. The number of neuroglia cells in proportion to the number of parenchymatous cells is smaller in the pineal gland than in the cerebrum. The number of neuroglia cells is greater in the extraglandular zones that is at the periphery of the true parenchyma where the intermingling of the nerve and neuroglia fibers forms complicated plexuses.

On silver staining several types of neuroglia cells are found in the human pineal gland. The gliocytes of the pineal gland are closely connected with the vessels. They form very complex perivascular systems.

In addition to the ordinary gliocytes which are distinctly fibrous in character there is another



granular form which appears to be connected with the function of the gland. These are shown very clearly by the author's method of silver carbonate staining. They are scattered irregularly through the gland parenchyma and are often particularly numerous at the margins of the lobes. They were found in large numbers in the pineal gland of a young man who died of cerebral tumor.

The quantitative differences in the neuroglia are so great even normally that it is difficult to say just when hyperplasia begins. Changes occur in the gland in various diseases but they do not seem to be specific. The gliosis may be circumscribed or diffuse, lobular, perilobular, endolobular or extralobular or occur in plaques. Cysts often develop in the plaques. Degenerative changes in the neuroglia fibers may be manifested by ring-shaped or key-shaped masses of fibers or by hyalinization of the fibers. Brain wind resembling the sandy concretions of the choroid plexus is sometimes found in the pineal gland. *WALTER C. MORGAN, M.D.*

**Horrax G. and Haigh G.** A Study of the Recession of Choked Disks Following Operations for Brain Tumors. *Arch Ophth* 1928 14:1 467

Horrax and Haigh studied the recession of papilledema in 100 patients operated upon for brain tumor. They found the average recession was least (63 per cent) in the cases of supratentorial tumor in which only a decompression without removal of the neoplasm was performed and was greatest (or per cent) in the cases of subtentorial tumor in which the neoplasm was completely or extensively removed.

From the point of view of the location of the tumor the recession was greatest (66 per cent) in the cases of tumors of the cerebellopontile angle most of which were acoustic neuromas. From the point of view of the pathological type of tumor little definite information could be obtained.

*LEO M. DAWSON, M.D.*

**Guleke N.** The Surgical Treatment of Meningitis Following Traumatism and Other Infections (Die chirurgische Behandlung der Meningitis im Gefolge von Traumen und anderen Infektionen). *52 Tg d deutsch Ges f Chir* Berlin 1928

Surgeons in contrast to otorhinologists usually have little to do with meningitis in times of peace and comparatively few reports on acute suppurative meningitis have appeared in the literature. Many of the 100 large surgical clinics to which the author sent an inquiry regarding the results of the surgical treatment of suppurative meningitis had had no cases. Moreover Guleke's own material that of the Jena surgical clinic is not very large. Among 76,442 patients there were only 5 with serous meningitis and only 23 with diffuse suppurative meningitis. All of those with serous meningitis were cured but of those with suppurative meningitis 22 died. The cases of diffuse suppurative meningitis were grouped according to the cause of the condition as follows:

Cause	Cases	Cured
Skull fracture	6	1
Operation for brain tumor	1	0
Ichthous t. rain prolapse and cerebrospinal fluid fistula	5	0
Perforation of abscess of the cerebellum	1	0
Postoperative empyema (cystic tumor)	1	0
Infective lecephalocele or meningocele (1 case operated upon)	4	0
Tumors of the face or nose	4	0
Osteomyelitis of the pine	1	0

There were also a number of cases of spinal meningitis. In these a cure resulted. Of 34 patients with otogenic meningitis 33 died in spite of operative intervention. In the 707 cases of skull fracture admitted in the period from 1920 to 1928 there were 18 deaths a mortality of 2.6 per cent. In the 51 cases of fracture of the vault of the cranium there were 6 deaths a mortality of 12 per cent. One (2 per cent) of the deaths was due to meningitis. In the 45 cases of fracture of the base of the skull there were 11 deaths a mortality of 25 per cent. In this group also 1 (2 per cent) of the deaths was due to meningitis. One case of meningitis was cured the incidence of cure being therefore 4 per cent. In the 11 cases of fracture of both the vault and the base of the skull there were 5 deaths a mortality of 45 per cent and 1 (18 per cent) of the deaths were due to meningitis.

The author briefly reviews the anatomy of the arachnoid or subarachnoid space which is of particular interest to the surgeon. This space is not uniform but presents besides numerous mesh formations narrow and wide spaces. At the base are the cisterns the largest of which the cisterna occipito-medullaris is from 1 to 1.5 cm deep. The spinal cord space is divided by the ligamentum denticulatum into a wider anterior and a narrower posterior space. The posterior space is particularly narrow in its thoracic portion so that irrigation is hardly possible. When colored solutions are injected the dye does not appear in the region of the occipital lobe. The circulation of the cerebrospinal fluid which takes its origin from the choroid plexus and the epithelial covering of the ventricle of the brain is not rapid and uniform it is influenced by the movements of the pulse and respiration from which it receives a motion resembling that of a pendulum. The movements of the head also have a pumping effect upon it. These facts explain the frequent spread of meningitis by leaps and the cap like distribution of the condition without involvement of the occipital lobe. The spread of traumatic meningitis depends also upon other circumstances such as the occurrence of edema and prolapse of the brain. According to whether one or the other of these occurs a convective meningitis or a basilar meningitis develops. The latter is more frequent after gunshot injuries. In these conditions also the disease often spreads by leaps sometimes occurring for example on the side opposite that of the injury.

Meningitis of the spinal cord develops most often posteriorly in the narrow part. When it develops anteriorly it is less severe.

Meningitis must be divided first into the circumscribed and the diffuse forms. Hematogenic meningitis is most often diffuse. The surgeon is concerned chiefly with the meningitis which is spread by continuity or arises from contact (trauma suppuration).

Cases of fracture of the base of the skull are of particular interest, their mortality from meningitis being high.

The author does not go into details as to the diagnosis and clinical course. He states that the prognosis is uncertain as the severest forms often regress spontaneously whereas milder forms often end fatally. Moreover the demonstration of the presence of certain micro organisms is not of definite prognostic significance. The finding of streptococci is regarded as more unfavorable than the finding of staphylococci and the pneumococcus is very much feared. However even streptococcal meningitis may terminate in recovery.

In the treatment the two chief aims are to remove the source of the suppuration and to combat the spreading inflammation. The first can be attempted only when a known primary focus is present, that is in the cases in which the infection occurred by extension and rarely in those in which it took place by the blood stream. To combat the progress of the inflammation it is necessary to operate at the beginning of the meningitis. When the fracture is extensive it is difficult to decide how far to go. Voss of Frankfurt advised going as far as possible with the object of prophylaxis, but the author is more conservative. The extension of meningitis by leaps makes the decision as to the operative indications very difficult. Between two pus foci there may be healthy bone and healthy dura. Frequently the decision as to whether other foci are present is aided by examination of the cerebrospinal fluid. Punctures carried out from the margin of the bone do not always hit the pus focus. In some cases the progress of the meningitis is successfully stemmed whereas in others only local benefit is obtained and the general meningitis progresses. If the meningitis cannot be otherwise controlled lumbar suboccipital or ventricle puncture is to be considered. Immediate improvement often follows such a procedure. This is due not to the removal of bacteria or toxins but to the relief of pressure and not so much to the mechanical consequences of the latter as to the improvement in the circulation through the injured portions of the brain by which fresh defensive material is supplied. It must be borne in mind however that the puncture is not without danger. It can change a local into a generalized meningitis and may be followed by collapse fatal hemorrhages or abscess perforation. Hence extreme care is necessary. The puncture should be carried out only with the patient in the prone position and should be controlled by measurements of pressure. Particular care is indicated if the medulla is pressed downward (sudden lowering of pressure).

Opinions as to the value of puncture are still divergent. Krause speaks of disastrous results. Garre

believes that in one of his cases he effected a cure by puncture. The procedure seems to have been beneficial in a number of cases particularly when it was cautiously repeated. There is lack of agreement also as to whether suboccipital or lumbar puncture is preferable. Ventricle puncture can be considered only in the case of a closed ventricle. If the puncture has only a temporary effect drainage should be increased by exposing the cisterns, but even when this is done the occipital portion of the brain will still remain shut off. Following this procedure all the results depend mainly upon the relief of pressure since drainage is effectual only in cases of thin pus that is early cases. Drainage of the ventricle remains as a last and desperate remedy. Laminectomy of the second to the third lumbar vertebra may be added to drainage and the exposed dura then widely opened. In this procedure also there is danger of collapse and of extension of the infection. The openings thus made are ineffective after four or five days but some times as in 2 of the author's 8 cases in which this treatment was used the temporary drainage is sufficient. Guleke regards irrigations as inadvisable as they do not reach all parts and are not without danger having been followed by irritation and paralysis. On the other hand in epidemic and streptococcus meningitis they have sometimes been followed by improvement. The author opposes irrigation with antiseptics even more strongly than irrigation with physiological solutions. With regard to the value of serotherapy he is skeptical although there are reports of cures in cases of epidemic meningitis and even in cases of streptococcus meningitis from the use of streptococcus antiserum. He has little to say also with regard to vaccine therapy.

Summing up Guleke holds that the most important factors in the treatment of meningitis are complete quiet and removal of the primary focus. Next in importance are lumbar puncture repeated if necessary and drainage. He is very skeptical as to the value of irrigations and chemotherapeutic remedies also as to urotropin although he still uses it.

Exact statistics are impossible. In all 61 (79 per cent) of 325 cases of meningitis he has been reported cured but in the author's opinion this percentage is too high. Guleke refers again to his own material and states that 131 of his results were equally poor. He states that the surgical treatment inaugurated by Kuemmel and Barth must be further worked out. Of chief importance however is the prevention of meningitis by careful treatment of skull wounds (removal of the wound track and closure of the wound as far as possible), conservatism in operating on the meninges and appropriate treatment of furuncles and other pus foci from which meningitis can originate.

Following Guleke's report Zaver discusses meningitis from the standpoint of the ologist. His conclusions are based on twenty year experience in military and civil practice, inquiries made of others and 1300 cases of meningitis including 150 of nasal and 160 of pharyngeal origin.

Zange first defines meningitis and calls attention to the fact that not every cerebro-penal hydrops is inflammatory. Puncture may reveal increased pressure but no further changes in the cerebrospinal fluid such as an increase in cells or protein. On the other hand the cerebrospinal fluid may show changes due to resorption. In the cases of meningitis which are of interest to the surgeon and otologist the determination of the previous infection is of importance as well as the clinical symptoms and the changes in the cerebrospinal fluid picture.

Zange excludes from his discussion meningitis not due to infection. He deals principally with two forms: suppurative meningitis beginning suddenly or insidiously in which the cerebrospinal fluid does not necessarily contain pus but always contains polymorphonuclear cells and serous meningitis which may go on to the suppurative form. He states that the diagnosis is not always simple, even the experienced otologist may err. A differential diagnosis between circumscribed and generalized meningitis is not always possible even after trephination. Nevertheless the results of treatment depend upon early diagnosis since meningitis can be influenced by way of the primary focus only in the early stage. The value of chemotherapy and serotherapy is still doubtful. The withdrawal of cerebrospinal fluid has its dangers although in some clinics it has increased the number of cures. Urotropin helps decidedly in many cases. A comparison of the statistics before and after its use showed that it has increased the number of cures by about half. Bier's pressive hyponitric acid applied to the neck sometimes has a favorable influence particularly after the withdrawal of cerebrospinal fluid. The chief essential however is exclusion of the primary focus and of the route by which the infection travels as completely and as early as possible. For this an exact knowledge of the routes is necessary. These routes are outlined by Zange as follows:

**THE SITES AND ROUTES OF INFECTION OF MENINGITIS ORIGINATING IN THE EAR, NOSE OR PHARYNX, INCLUDING SIMULTANEOUS INJURY TO THE BASE OF THE SKULL (FRONTAL STAB WOUND OR GUNSHOT WOUND)**

**A.** With origin in the ear (middle ear with its accessory cavities in the mastoid and the rest of the petrous portion of the temporal bone)

**I.** In acute and chronic suppurations of the middle ear

**a.** To the middle cranial fossa through (1) the tegmen tympani (2) the anterior or posterior base of the tip of the petrous portion of the temporal bone (near the chiasm) in osteomyelitis of this part of the bone (rare)

**b.** To the posterior cranial fossa (rare) directly through the bone in front of or behind the transverse sinus and sigmoid sinus (with origin in the mastoid process) (2) indirectly by way of an infectious meningeal thrombosis (with origin in the mastoid process) or by way of the inner ear (otitis interna) through the inner auditory meatus or through the aqueductus vestibuli and empyema of the sacculus endolymphaticus. This occurs almost only in chronic otitis media and interna when there is usually first a cerebellar abscess and then secondary meningitis

**II.** With simultaneous fracture of the base of the skull involving the ear. The infection spreads by way of the bony projections of the base of the skull most frequently through the tegmen tympani and along the anterior margin of the petrous portion of the temporal bone in front of the inner ear and more rarely through the mastoid process and the foramen transversarium (behind the inner ear) or through the tegmen tympani and inner ear (cochlea and labyrinth) into the inner auditory meatus. To prevent errors in diagnosis it is particularly important to note that in spite of the fact that in all cases of extradural disturbances of the inner ear (loss of hearing, vertigo with nystagmus, etc.) are regularly present, the causes may be not in the inner ear but behind the labyrinth (tear of the internal hemorrhoidal space from the eighth nerve).

**III.** With infected puncture wounds or gunshot injuries. The route of infection is either the puncture or gunshot track injuring the cranium or inner ear or projections from the skull.

**B.** With origin in the nose and its accessory cavities

**I.** In acute and chronic suppurations of the nose and accessory cavities

**a.** In infections (furuncle) of the external nose (upper lip) from a spreading thrombophlebitis by way of the venous plexuses and sinuses of the base of the skull (cavernous sinus thrombosis, etc.)

**b.** In spontaneous suppurations of the inner ear through the lamina cribrosa by way of the lymph or blood vessels (extremely rare)

**c.** In suppurations of the accessory cavities through the frontal bone or the roof of the ethmoid cavity or the sphenoidal sinus or through the lamina cribrosa (the latter route almost only after operative injuries which may result from an error in technique)

**d.** In extension on the suppurations of the accessory cavities (mostly suppurations of the antrum of the maxilla or the ethmoid) to the orbit (orbital phlegmon) as a rule by progressive thrombophlebitis of the orbital venous way of the venous plexuses and sinuses of the base of the skull particularly in cavernous thrombosis

**II.** With simultaneous fracture of the base of the skull through the fracture line in the lamina cribrosa (frequently) or the roof of the accessory cavities

**III.** With other injuries

**a.** In traumatic base of the nasolacrimal duct through the lamina cribrosa (partially also in dull injuries of the external cartilaginous and bony nose)

**b.** In puncture wound through the orbit when the site of the puncture is within the range of the eye usually through the roof of the ethmoid and the lamina cribrosa or multaneously through the roof of the sphenoidal sinus. When the site of the puncture is more lateral through the roof of the frontal sinus

**c.** In gunshot injuries according to the position and direction of the wound track either from the wound track or from lateral projection

**C.** With origin in the pharyngeal or buccal cavity in perforating and lateral pharyngopalatine or with origin in the teeth alveoli through an ascending thrombophlebitis by way of the venous plexuses and sinuses of the base of the skull (cavernous thrombosis, etc.)

Zange emphasizes that it is of particular importance as regards the operative procedure to recognize the fact that the infection frequently passes through the unchanged bony wall by way of the venous canals. He then reviews statistics regarding the successful results and failures of surgical treatment.

By exclusion of the primary focus 21 (39 per cent) of 54 patients (some of whom were moribund) were cured. Of 1282 cases treated in other clinics (including some that were very severe) a cure was obtained in 364 (28 per cent). Of early cases 24 per cent and of fully developed cases 33 per cent were cured. Of cases of meningitis originating in the labyrinth 22 per cent were cured. When the condition was unilateral a cure was obtained in 65 per cent. Of cases in which the infection originated in the nose 6 per cent were cured. Of the 21 cases in which it began in the pharynx all were fatal operation was performed in 19.

Zange calls attention particularly to the difference in mortality between the cases that came for treatment early and those that came late. He emphasizes the importance of diagnostic spinal puncture but states that its results are of value only to corroborate the clinical picture. He calls attention to certain possibilities of error in the examination of the cerebrospinal fluid. When adhesions are present the cerebrospinal fluid may be entirely normal at one place and present the findings characteristic of meningitis at another. In suppurative meningitis the fluid may at first be entirely clear but contain an increased number of lymphocytes and granulocytes whereas in serous meningitis it shows only lymphocytes.

The changes occurring in the cerebrospinal fluid in trauma or infection (hemorrhages) are cited. These changes appear promptly but in contrast to the changes caused by inflammation usually subside rapidly. As the diagnosis is often not made until late Voss always gives prophylactic treatment. He has obtained good results by following this plan but the author does not accept his recommendation. Zange warns particularly against proceeding too energetically in fractures of the base of the skull. He believes that an expectant policy should be followed in these cases the patient being kept under constant observation.

Zange next reviews the various operative procedures for exclusion of the primary focus and of the routes of propagation in the region of the lateral and anterior cranial fossae. He describes the technique for exposure of the semicircular canals without injury to the facial nerve or the fenestra rotunda. Attention is called to the fact that as in the nose the true locus is sometimes not found at radical operation. Frequently the focus must be exposed at a distance in the dura. Sometimes the vestibulum and cochlea must be exposed (Jansen's extended operation). In the case of the nose it is often necessary to expose all of the accessory cavities. In the case of the extremely sensitive lamina cribrosa the greatest caution is necessary as it is often through this structure that extension of the meningitis first takes place.

Finally Zange describes the fronto-orbital route (removal of the frontal process of the nasal bone lacrimal bone lamina papiracea floor of the frontal sinus ethmoid sphenoidal sinus and the roofs of

the frontal and sphenoidal sinuses with care not to injure the lamina cribrosa). The operations necessary are often such as to require the most accurate anatomical knowledge.

The author agrees with Guleke that the chief aim of our endeavors should be to prevent the occurrence of meningitis.

In the discussion KOENIG (Wuerzburg) cites the difficulties met with by the surgeon especially the surgeon in the country in this field in which the cooperation of surgeon and otologist is so necessary.

WILLICH (Jena) reviews his investigations on the circulation of the cerebrospinal fluid. With dye stuffs or the iodine test he attempted to ascertain how soon fluid injected by the lumbar or the suboccipital route would appear at the opposite end. He has come to the conclusion that there is no important physiological current as the appearance of the injected fluid could be hastened by raising the pelvis or the head. The results of the test in a child with hydrocephalus and spina bifida are cited. Both suboccipital and lumbar injections were made. With the head lowered the test fluid appeared in the right but not in the left ventricle. Encephalography showed an open hydrocephalus on the right side and closure on the left side.

SCHMUTTER (Jena) discusses the action of antiseptic solutions in the subarachnoid space. The experiments were carried out on 32 dogs. Mercury preparations such as sublimate and also iodoform and acridine preparations had an injurious effect on the tissues causing necrosis. After the injection of quinine preparations there was no necrosis but foci of degeneration appeared. Iresoid caused hyperemia and exudation silver preparations definite round cell infiltration and hyperemia and solution of sodium chloride hyperemia but only slight round cell infiltration. The experiments show that the action of introduced antiseptic substances is not to be underrated.

SCHÖNBAUER (Vienna) discusses the fate of patients discharged after recovery from meningitis. Of 25 patients treated in 1921 3 are still living. One of these is still able to work at full capacity seven years after his discharge. Another also remained well for some time but died later of disease of the liver. The third suffers from epileptic convulsions. Of 66 patients treated in Irigut's pediatric clinic 13 are still alive. Of 30 children who had epidemic meningitis 8 are still living. One of these is deaf 3 have hydrocephalus 1 entered the clinic again on account of epileptic convulsions 1 continues to have symptoms 1 died a few weeks after discharge and only 1 remained entirely cured and developed well. Therefore of 10 children who survived only 3 are normal. All of these cases were treated with serotherapy not by surgery.

STARLINGER (Innsbruck) reports that he has been able to demonstrate urotropin in cerebrospinal fluid obtained by corpus callosum puncture and drainage of cysts. In experiments he injected a 10 per cent solution of urotropin into the internal carotid. On

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A. With origin in the ear (middle ear with its accessory cavities in the mastoid and the rest of the petrous portion of the temporal bone)

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b. To the posterior cranial fossa (1) directly through the bone in front of or behind the transverse sinus and sigmoid sinus (with origin in the mastoid process) (2) indirectly by way of an infectious sinus thrombosis (with origin in the mastoid process) or by way of the inner ear (otitis interna) through the inner and lary meatus or through the aqueductus cerebri and empyema of the arculus endolymphaticus. This occurs almost only in chronic otitis media and interna, when there is usually first a cerebellar abscess and then secondary meningitis.

II. With simultaneous fracture of the base of the skull involving the ear. The infection spreads by way of the bony projections of the base of the skull most frequently through the tegmen tympani and along the sphenoid margin of the petrous portion of the temporal bone in front of the inner ear and more rarely through the mastoid recess and posterior cranial fossa (but not the inner ear) or through the tegmen tympani and inner ear (forbica and labyrinth) into the inner and lary meatus. To prevent errors in diagnosis it is particularly important to note that in spite of the fact that in all 3 cases severe disturbances of the inner ear (loss of hearing, vertigo with nystagmus, etc.) are regularly present the causes may lie not in the inner ear but behind the labyrinth (tear, contusion, hemorrhage from the eighth nerve).

III. With infected puncture wounds or gunshot injuries. The route of infection is either the puncture or gunshot track injuring the cranium or inner ear or projections from this track.

B. With origin in the nose and its accessory cavities

I. In acute and chronic suppurations of the nose and accessory nasal cavities

a. In infection (furuncle) of the external nose (and upper lip) from ascending thrombophlebitis by way of the venous plexuses at the angles of the base of the skull (cavernous sinus thrombosis, etc.)

b. In pure suppurations of the inner nose through the lamina cribrosa by way of the lymph or blood vessel (extremely rare).

In suppurations of the accessory cavities through the frontal bone or the roof of the ethmoid cavity or sphenoidal sinus or through the lamina cribrosa the latter route almost only after operative injuries such as may result from an error in technique.

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STARLINGER (Innsbruck) reports that he has been able to demonstrate urotropin in cerebrospinal fluid obtained by corpus callosum puncture and drainage of cysts. In experiments he injected a 10 per cent solution of urotropin into the internal carotid. On

subsequent examination he was able to demonstrate 0.75 per cent of the urotropin in the cerebrospinal fluid but none in the brain.

BRUENINGS (Jena) states that he has endeavored to improve the chances for the early diagnosis of meningitis. In cases in which other symptoms of meningitis are still absent pressure on the jugular vein will cause headache. This is Quackenstaedt's test. The pressure must be continued for one minute. Even in clinically cured cases stress in the jugular vein causes headache a sign that residues of the meningitis are still present. With regard to examination of the cerebrospinal fluid Bruenings calls attention to the slow distribution of the corpuscular elements in the fluid which he demonstrated by the injection of autogenous blood. He states that the increase of pressure in the cerebrospinal fluid should be tested not by the first portion that escapes but by a later portion and he calls attention anew to the difference between cerebrospinal fluid pressure and brain pressure. The cerebrospinal fluid pressure gradually regulates itself if there is no hypersecretion. Increased brain pressure is caused by an increase in volume by edema. Increased brain pressure may occur without increased cerebrospinal fluid pressure. Withdrawal of cerebrospinal fluid does not influence brain pressure except at first. To reduce brain pressure Bruenings has slit the dura widely as far down as the basal cisterns after trephination and left it open five days. This resulted in reduction of brain pressure and improvement in the circulation in the brain. The number of cases thus treated is still small and the treatment was not always successful but in Bruenings' opinion this is the correct procedure.

ZELLER (Berlin) on the basis of experiments with only indirect anesthetization of the central nervous system recommends insufflation of gases into the subarachnoid space with the object of removing the infected cerebrospinal fluid as completely as possible and for bactericidal and narcotic effects. He believes that the cases most suitable for this treatment are those of diffuse meningitis in which puncture and irrigation are indicated. The injection of the gas by the suboccipital route has occasionally been followed by disturbances of the respiratory center. These are probably caused by unequalized pressure and do not occur with lumbar puncture. Of the various gases used so far nitrous oxide acetylene or one of these gases conducted through ether promises the best results. Nitrous oxide kills microorganisms but does so only under high pressure which cannot be used in these cases. According to Schmitzer of the Robert Koch Institute streptococci cannot be cultured from the blood of mice with a severe streptococcus infection when the blood is withdrawn under acetylene anesthesia. The cultures were sterile also in the cases of severely septic women during narcenyl narcosis. The lethal or at any rate development inhibiting effect of ether vapor on microorganisms particularly streptococci is known from the writings of Siegwart and of Philipp Lüding of

the subarachnoid spaces and the ventricles of the brain with nitrous oxide and with acetylene has caused no harm in Zeller's numerous animal experiments nor in several trials on human beings. Neither has there been any injury from the introduction of a stream of nitrous oxide or acetylene conducted through ether if the ether was not heated above its boiling point of 35 degrees C. Bier's passive hyperemia of the veins of the neck or the injection of hypotonic sodium chloride solution into the blood stream makes possible the rapid replacement of the cerebrospinal fluid and thus on renewed puncture an abundant washing out of the infected fluid.

SCHUECK (Berlin) warns as did Zange against operating without strict indications in cases of fracture of the base of the skull. In support of his attitude he cites figures from the Urban Hospital. In the first surgical division he has had in the last three years 45 cases of fracture of the base of the skull with 19 deaths. Twelve of the deaths occurred within the first twelve hours and therefore were not due to meningitis. In the 7 other fatal cases there had been from the beginning severe clinical symptoms of brain injury. Schueck has found that in the severe cases of fracture of the skull which end fatally there is nearly always an irreparable injury to the brain. Therefore the cases to be treated surgically must be selected with care. An extracerebral operation is illogical when a fatal intracerebral injury is present. Primary trephination is indicated in fracture of the base of the skull only when there is a true rising brain pressure.

DEVEL (Vienna) reports a case in which a bullet was retained in the skull and there were signs of brain abscess. Stiffness of the neck and severe headaches suggested meningitis and lumbar puncture yielded pus. After the lumbar injection of lipiodol and 2 injections of 40 c.c. each of antistreptococcus serum the cerebrospinal fluid became clear and sterile the stupor and the headaches decreased and the general condition improved but on the twelfth day pneumonia supervened and the patient died of the latter condition on the fourteenth day. Autopsy showed the changes of chronic inflammation in the meninges but no acute changes.

GULKE responds briefly to the remarks made by those who discussed his paper. He states that without doubt a current is present in the cerebrospinal fluid but it is very slow and can be influenced by position. It is doubtful whether this fact can be made use of therapeutically. The use of urotropin can be traced back to Linderlen and Justi. Whether urotropin is in fact very effective appears doubtful especially since it loses its activity in alkaline solutions. With regard to Zeller's proposition Gulke cites Schmutters' researches and states that he believes gas forming substances might act similarly to antiseptics. At any rate an irritation from pure atmospheric air has been observed in encephalography. He agrees that further progress in the treatment of meningitis will result from collaboration between surgeons and otologists.

ZANGI emphasizes again that great caution is necessary in the cases in which the diagnosis cannot be made with certainty. For this reason he is an opponent of prophylactic exposures. He states that caution is necessary especially in operations that do not immediately follow puncture of the primary focus. He holds that large irrigations in the prodromal stage are dangerous as they may easily make the condition worse. Operation is indicated in pressure fractures with subdural hematoma. In conclusion he states that progress in this difficult field is dependent chiefly on the establishment of the diagnosis and above all upon early diagnosis.

SALTINER (2)

### PERIPHERAL NERVES

Platt 11 On the Peripheral Nerve Complications of Certain Fractures *J Bone & Joint Surg* 1928  
x 493

Platt discusses nerve injuries accompanying fractures about the elbow. Involvement of the musculospiral nerve in fractures of the shaft of the humerus and involvement of the external popliteal nerve in fractures of the upper end of the fibula.

The elbow region is the most common site of simple fractures associated with nerve injury. In a large series of cases of dual injuries collected by Lewis and Miller 60 per cent of the fractures involved the lower end of the humerus.

The author reviews 552 recent fractures of the elbow 419 of the lower end of the humerus 62 of the olecranon and 71 of the upper end of the radius. In the cases of fracture of the olecranon and upper end of the radius there were no nerve complications. In the fractures of the lower end of the humerus there were 12 injuries of the ulnar nerve and 1 injury of the median nerve. Two of the patients with nerve injuries were operated upon and 11 recovered spontaneously. Of the injuries of the ulnar nerve 9 were associated with fracture of the internal epicondyle and 2 with a supracondylar fracture.

Lesions of the ulnar nerve are of the incomplete type and due to primary contusion or secondary friction neuritis arising from three to five weeks after the injury, chiefly as the result of a disturbance of the normal relationship between the nerve and its bed. It appears that in all fractures of the lower end of the humerus there is a critical stage at which the ulnar nerve may be damaged by stretching. If there is considerable distortion of the nerve bed as in uncorrected lateral displacement or if forced movements of the elbow are allowed a severe neuritis is almost certain to result.

When the first signs of nerve block are recognized the nerve should be protected from the cumulative trauma of stretching by resting the elbow and suspending all efforts at mobilization. The intrinsic muscle palsy should be treated by ordinary physiotherapy. As a rule this is sufficient but in the more serious cases such as the one with uncorrected displacement or a stiff painful elbow which has been

subjected to repeated forced manipulation early operation is advisable. The operation should consist in anterior transplantation.

Lesions of the median nerve are rarer than those of the ulnar nerve but tend to be more serious. Complete division is sometimes found. The nerve is injured by backward displacement of the lower fragment. When the involvement is slight conservative treatment may be tried for a short time but when bony displacement remains uncorrected and particularly when there is a superimposed ischaemic contracture the nerve should be released or sutured as indicated and placed in a new bed. The prognosis is favorable even after suture if the operation is not unduly delayed.

Musculospiral lesions are rare in supracondylar fractures. In fractures of the internal epicondyle the signs of nerve block are usually slight and transitory and spontaneous recovery is the rule. Obviously the nerve injured is the ulnar nerve. Following fractures of the external epicondyle ulnar palsy may develop years later. The accepted treatment for this condition is anterior transplantation. Prevention of late ulnar palsy in such cases lies in more efficient treatment of fractures of the external epicondyle. Such fractures constitute about 30 per cent of injuries to the lower end of the humerus occurring in childhood. If the fragment cannot be replaced it should be excised.

In fractures of the olecranon or upper end of the radius nerve injury is rare. Platt reports 2 cases. In 1 a fraction neuritis of the ulnar nerve developed five or six months after the fracture and was quickly relieved by anterior transplantation. In the other a posterior interosseous palsy developed twenty one years after fracture of the head of the radius and exposure revealed a small fusiform neuroma. The nerve was left *in situ* and the distorted head of the radius removed. Strangely the operation was followed by recovery of extension. Ulnar palsy occasionally accompanies dislocation of the elbow associated with separation of the internal epicondyle. Its pathogenesis and treatment are the same as those of fracture of this prominence.

It has been estimated that the musculospiral nerve is injured in from 4 to 8 per cent of fractures of the humerus. In 60 fractures of the humerus seen by the author there were 3 such injuries. Recovery resulted in all. In 1 it resulted spontaneously. In another it followed suture and in the third it followed neurolysis. Primary injury to the nerve may result from impaction by one of the fractured surfaces. In the author's opinion secondary lesions due to inclusion of the nerve in callus formation are rare. Secondary involvement usually results when the nerve becomes adherent to a sharp bony margin or anchored in the region of the groove. If the lesion of the nerve appears to be of the secondary type conservative treatment may be tried for three or four months as spontaneous recovery is frequent. If the condition remains stationary exploration is indicated. In the case of the musculospiral nerve



such delay does not materially affect the prognosis of end to end suture. In primary injuries in which grave injury is suspected early operation is generally advisable. A new bed should be provided for the nerve. In recent lesions a muscle flap may be sufficient but in old lesions the bed should be lined with fascia lata.

Fractures of the upper end of the fibula are comparatively rare but injury to the external popliteal nerve has long been a recognized complication. Of especial interest are fractures of the styloid process alone or of a more considerable fragment due to strong traction. Such fractures may complicate dislocation of the knee. During the past seven years the author has seen no case of external popliteal injury in fractures of the neck of the fibula but has operated upon 4 traction lesions of the nerve combined with fracture of the styloid process. In 3 of these suture was done ten days three months and three years respectively after the injury. In the first perfect function resulted after eighteen months. In the second there was feeble power in the muscle group at the end of three years. In the third there was no sign of regeneration at the end of three years. Early operation is advisable in this type of injury.

In the discussion of Platt's report Lewis said that in cases in which there has been no primary operation the nerve should be explored at the end of three months if there is no distinct evidence of recovery of function. The operation most frequently indicated is neurolysis.

CILBERT C. ANDERSON, M.D.

### MISCELLANEOUS

Bagley, C. Jr. Blood in the Cerebrospinal Fluid Resultant Functional and Organic Alterations in the Central Nervous System. *Arch Surg* 1928 xlvii 18.

In the first part of his article Bagley reports experiments performed on dogs to produce lesions simulating those occurring in man when a small amount of blood escapes into the subarachnoid space. Lighten dogs and twenty six puppies less than ten days old were used. The puppies belonged to five litters and an average puppy from each litter was used as a control. Whole blood from a leg vein in the dogs and from the longitudinal sinus of the puppies was injected into the cisterna magna, the subarachnoid space over the hemisphere and occasionally into the ventricles. The dogs received repeated small injections at short intervals some as many as six but most of the puppies received only one or two injections.

The adult dogs were restless and spastic immediately after the injection and recovered from the narcosis slowly. Some of them had convulsive seizures. The day following the injection they were dull but walked about and took food. Many of them died within a few days after the last injection showing marked debility and emaciation. Their be-

havior during the period they were under observation which in one instance extended to two months varied from moderate aberrations to severe convulsive seizures.

The most striking clinical course was observed in the younger dogs. After the injection the puppies were less active and refrained from play and when stirred to activity they lost interest more quickly than the controls. They were smaller and thinner than the controls although they ate well. Four of the twenty six puppies had convulsive seizures after complete recovery from the immediate effects of the injections.

Convulsive seizures immediately followed the injection in five of the ten adult dogs in which the blood was injected directly over the cerebral cortex and in one of the four dogs in which it was injected into the lateral ventricles. In the cases of the puppies convulsions did not occur immediately after the injections.

Four of the twenty six puppies had convulsions after complete recovery from the immediate effects of the injection. The first puppy had a convulsion twenty three days after the last injection and survived thereafter for thirty six hours but during that time had numerous seizures. The second had its first convulsion forty five days after the last injection and died the same day. The third puppy had his first seizure eighty days after the last injection but recovered promptly and remained fairly well for seventy two days and then died suddenly in another attack. The fourth pup had seizures ninety three and ninety four days after the last injection but recovered and was kept under observation for eighty seven days during which time he had no convulsions but was aggressive and ill tempered. He was killed in a fight with another dog.

The seizures were all similar beginning with first twitching of a muscle group and spreading over the entire body. The animal soon lost consciousness and fell. Before the loss of consciousness the facial expression showed marked anxiety. Following the attack the animal was dull and stupid.

Some of the puppies had twitchings without convulsions and six of them died without either twitchings or convulsions.

In the cases of six puppies and one dog necropsy revealed well marked dilatation of the ventricles although there had been no clinical signs of this condition.

The microscopic study of the brains showed meningeal thickening where the blood came in contact with the membranes. In the cases of the dogs killed soon after the last injection i.e. in the acute stage of the reaction the meninges showed marked cell proliferation. In some cases the thickened meninges contained a large amount of fibrous tissue. One photomicrograph included in the article shows the meninges of a sulcus in active cell proliferation extending into the cortex at the site of a blood vessel. The meningeal reaction tended to subside and in some disappeared as the blood disappeared.

from the fluid. After several weeks the cellular elements were less numerous in the meninges but a large amount of fibrous material was present and later in the course of the meningeal reaction changes were observed in the structure of the cortex.

Twelve of the puppies died as a result of the injections eight were killed for histological study and six are living and apparently well more than one year after the last injection.

The second part of the report consists of brief histories of twenty seven cases of bloody cerebrospinal fluid. The discussion does not include cases with large blood clots. In most of the cases the condition was the result of trauma but in two it was due to congenital venous anomalies in one case to a tumor of the brain which was present at birth and in five cases to an aneurism of the anterior cerebral arteries. In the cases of four patients who recovered the cause could not be determined but was probably arteriosclerosis.

Attention is directed to the importance of cerebral trauma without displacement of bone. The author states that even a small blood clot may result in epilepsy or traumatic insanity. Symptoms following the escape of blood into the cerebrospinal fluid depend upon the amount of blood and vary from slight headache to severe pain with convulsive seizures and loss of consciousness. The most important signs and symptoms in patients with a small quantity of blood in the cerebrospinal fluid usually appear after an interval of a few days and are due to the reaction of the meninges. They may gradually subside as the blood is absorbed. In adults recovery may take place but in the cases of infants who are not treated muscle rigidity and epilepsy frequently develop.

The treatment is aimed at removal of the irritating blood and the prevention or relief of meningitis. This is best accomplished by drainage of the fluid by lumbar puncture decompression or the formation of a bone flap. GILBERT C. ANDERSON M.D.

# SURGERY OF THE CHEST

## CHEST WALL AND BREAST

Trinca A J Abnormal Hyperplasia of the Female Breast and Its Relation to Tumor Formation  
*Med J Australia* 1928 1 732

The etiology of hyperplasia of the breast seems bound up with the remarkable and sensitive reaction of the breast to stimulation. During menstruation swelling of the breasts with or without pain and tenderness is common and occasionally there is a definite secretion from the nipple. In both sexes similar conditions are found in the maturity of puberty. The stimuli causing these changes are probably of endocrine origin.

Localized breast thickenings may result from chronic mechanical irritation and repeated trauma. In the cases of girl and young women they may be treated conservatively if there is a history of mechanical or other stimulation. The use of ointments or any form of treatment that involves rubbing is to be condemned as mechanical stimulation will promote secretion.

In the removal of specimens from thickenings in the breast for microscopic examination the author induces anesthesia with nitrous-oxide oxygen as with this form of anesthesia the patient can be kept in a light and safe state of narcosis for a sufficient time for several pieces of tissue to be sectioned and examined.

In the treatment of cysts age is the dominant factor. In the cases of young women especially if the condition is bilateral conservative surgery consisting in the removal of the cyst may be attempted but in the presence of multiple lumps there is no excuse for conservatism. Particularly after the third decade of life the breast tissues as a whole should be removed and a thorough microscopic examination made of each thickening at the time of operation.

MURIEL H. HOOK, M.D.

## TRACHEA LUNGS AND PLEURA

Brown R C Bronchiectasis in Children The Pseudo Robust Appearance in Cases Associated with Nasal Accessory Sinus Suppuration  
*Proc Roy Soc Med Lond* 1928 vol 1569

The author calls attention to the frequency of the association of antral (or more rarely other nasal accessory sinus) disease and bronchiectasis in children. In 1921 he pointed out that there is a typical facies in these cases. The patient appears healthy, even robust on casual observation and except in cases with the typical adenoid facies which is a rare accompaniment of the condition the face is broad because of the large size of the antral cavities and the upper jaws.

In the treatment any nasal obstruction should be corrected and antral or other sinus suppuration cleared up by conservative or if necessary radical measures. Middle turbinectomies with tonsillectomy and adenoidectomy may be required. For the bronchiectasis Brown advocates postural drainage and creosote vapor baths. He has found bronchoscopic treatment disappointing.

JACOB M. MORA, M.D.

Lee W F Tucker G and Clerf L Postoperative Pulmonary Atelectasis  
*Ann Surg* 1928 135 6

Lee W E Raydon I S Tucker G and Fender Grass E I Studies on Experimental Pulmonary Atelectasis  
*Ann Surg* 1928 135 15

LEE TUCKER and CLERF. The authors believe the true etiological factors in postoperative pulmonary complications are the phenomena of pulmonary collapse of varying degrees together with pulmonary embolism and infarction. They agree with Masters that over 70 per cent of the so-called postoperative and postanesthetic pneumonias are varying degrees of atelectasis. They state that massive atelectasis involving more than one lobe of the lung is usually mistaken for pleural effusion, empyema or pneumothorax. Lobar atelectasis involving only one lobe is diagnosed as lobar pneumonia and lobular atelectasis involving scattered areas in one or more lobes is diagnosed as bronchopneumonia or pulmonary infarction.

In a study of thirty three cases of postoperative massive atelectasis to determine the cause of the condition two factors were found to be constant: (1) a thick, viscid bronchial secretion and (2) some inhibition of coughing. When the patient is unable to clear the secretion from the bronchi it accumulates in the dependent portions of the bronchial tree until at some point or points it completely occludes the lumen. If the occlusion takes place in a small bronchiole lobular atelectasis results. If it occurs in a bronchus leading to one lobe lobar atelectasis results and if it occurs in a main bronchus of either lung massive atelectasis develops.

Archibald found that after a number of coughing spells stimulated by mechanical irritation of the pharynx substances of the consistency of mineral oil are drawn further into the lung and probably reach the terminal alveoli whereas substances of greater consistency and viscosity such as mucus and sputum are expelled by the first expiratory effort and are rarely drawn further into the bronchi. It is conceivable that when the viscosity of the bronchial secretion is not sufficient to insure complete expulsion by the expiratory cough nor sufficiently fluid for the secretion to be drawn into the terminal

bronchioles it will move back and forward at expiration and inspiration and definite waves will be created on its surface. At the point where the expiratory and inspiratory waves meet there is a piling up of the viscid bronchial secretion into waves which on reaching the opposite wall of the bronchus completely occlude the lumen.

Clinically the authors have demonstrated that if the obstruction can be overcome by making the patient cough by changing his position as suggested by Santee by vigorous shaking or in the cases of young children by spanking and an airway can be established past the point of obstruction the patient may temporarily at least free the bronchial tree of large masses of secretion and thus re-inflate the pulmonary tissues. In eight cases in which the authors found it necessary to aspirate through a bronchoscope the aspiration was followed by immediate re-inflation of the lung distal to the obstruction.

The authors report a case in which massive atelectasis developed after a radical inguinal herniorrhaphy performed under ether anesthesia. During the administration of the anæsthetic there was more mucus in the respiratory tract than usual and about twenty-four hours after the operation breathing became peculiarly distressing and strained because of pain in the operative wound. The temperature then began to rise and complaint was made of a slight midclavicular pain. Forty-two hours after the operation the respiratory symptoms were still more marked and there was a distinct displacement of the heart to the left. The clinical diagnosis of atelectasis was confirmed by roentgen ray examination. Ten hours after the onset of the clinical symptoms Clerf drained through the bronchoscope from the left main bronchus 9 c cm of thick, tenacious bronchial secretion which gave a pure culture of pneumococci. The bronchoscopic drainage was followed by immediate relief.

The material removed was kept on ice for twenty-four hours and then introduced into the main bronchus of a dog. In order that all of the suspected etiological factors might be provided the dog was narcotized with morphine and anesthetized with ether and an operative incision was made into the abdominal cavity and closed surgically. Then 7 c cm of the secretion removed from the patient were introduced into the right main bronchus. Coughing and struggling followed which drew the secretion into the deeper portions of the bronchial tree. At this point 250 mgm of sodium amylal were administered intraperitoneally to eliminate the cough reflex. With the loss of the cough reflex respiratory efforts became deeper and the entire mass of bronchial secretion was drawn into the right bronchus. A few minutes after the complete introduction of the bronchial secretion and following the removal of the bronchoscope definite respiratory distress developed. This distress was often so marked that it seemed that the dog was about to die. Finally however the respiratory movements became regular

and rhythmic although because of the amvital they were slow. The movements of the right side of the chest became restricted while those of the left side were greatly exaggerated and there was a distinct hugging with a visible increase in the size of the left half of the thoracic cavity. After three hours roentgen ray examination revealed complete atelectasis of all of the lobes of the right lung with transposition of the heart of the right beyond the spine.

So far as the authors are aware this is the first successful attempt in which the obstructing bronchial secretion from a clinical case of postoperative massive atelectasis was used to produce the condition in an animal.

LEE RAYMOND TUCKER and PENDERGRASS. The authors report in detail five experiments in which pulmonary atelectasis was produced in dogs. One was the experiment described in the article by Lee Tucker and Clerf above. In the others the material introduced into the bronchial tree was acacia solution similar in its viscosity to the secretion found in clinical cases. C O HERRICK, M D

#### Joannides M. Surgery of the Lung. Care of the Stump in Pneumectomy and in Lobectomy. *Irish Surg.* 1925 vol 95

In 1909 Meyer summarized the main steps in the various operations on the lung that had been devised up to that time as follows:

1. The application of a single mass ligature around the bronchus and its vessels; amputation; cauterization of the mucosa of the stumps with pure phenol or the Paquelin cautery.
  2. The application of a single elastic mass ligature around the hilum and removal of the lung at a second procedure ten days later.
  3. Ligation and division of the main bronchus with suturing of the remnant of lung tissue over the stump.
  4. Isolation and temporary clamping of the bronchus; curettage of the bronchus; the application of a tight silk ligature; the application of a loose catgut ligature more centrally around the bronchus.
- A method for pneumectomy which Meyer has found successful consists of the following steps: (1) isolation of the bronchus; (2) clamping and crushing of the bronchus; (3) ligation and amputation; and (4) burying of the stump and the insertion of top sutures.

In an ingenious technique he devised for lobectomy Lilienthal applied a chain of pedicle suture ligatures and then excised the lung leaving a generous stump. The ligatures were left long and were included in a rubber dam pocket which prevented the remaining intrathoracic viscera from coming into contact with the stump. After this procedure the rubber dam and the ligatures sloughed out leaving a healthy stump.

In the surgical treatment of the lung hæmorrhage is the least troublesome factor. The success of operation depends upon the formation of a completely air tight stump. As the respiratory movement of

the lungs causes contiguous lobes to interfere it is necessary to pack the lobes away with wet gauze so that injury will not be produced. Sometimes even a slight puncture with the needle or the tip of the knife causes troublesome leakage of air and blood necessitating suture of the lung. Other unfavorable factors are increased intrathoracic pressure from the thoracotomy opening a sudden change in the temperature of the intrathoracic organs manipulation and exposure of the pleural cavity and disturbance of the vagus and phrenic nerves. The more quickly the operation is performed the better the chance for recovery.

Joannides describes a technique for pneumectomy which may be completed in twelve minutes under artificial respiration. An incision is made parallel with the ribs and the platysma and latissimus dorsi are incised in the direction of their fibers. The pleura is then punctured the opening being enlarged by the fingers or a blunt instrument and a rubber covered intestinal clamp is applied to the hilum with pressure sufficient to control hemorrhage and leakage of air. The lung is then cut a wedge shaped piece of tissue being left to cover the stump and the bronchi and large vessels are isolated and ligated. The lung tissue is sutured with a running suture begun at the middle first on one side and then on the other. In such a way as to bring the two sides of the wedge into apposition. After this suturing has been completed the clamp is removed and if leakage of blood or air occurs interrupted sutures are applied. The stump is then closed and dropped into the chest and the wound is closed. In some experiments the phrenic nerve is cut just before the chest is closed in order to cause paralysis of the diaphragm and thus reduce the danger of suction through the stump. Three fine wires are used to aid the approximation of the ribs. Care is taken not to handle the heart or the pericardium any more than is necessary as even the slightest handling has caused definite irregularity in the cardiac rhythm.

Fifty four partial or complete pneumectomies were performed on dogs. Nine of the dogs operated upon in the earlier experiments died on the table. All of them showed evidences of pleural irritation with a greater or less amount of exudation. In dogs that died during the first ten days after the operation the chest was found full of serosanguinous exudate which would not clot either within or outside of the chest. In one experiment necrosis of the stump with infection and leakage resulted because an undue amount of strength was used in tying the suture. In all cases a thickening of the pleura around the stump was found. Thickening of the pleura and adhesions are important factors favoring a good result.

The method described has been found satisfactory in experiments on the dog. It provides a stump which eventually becomes strong and prevents perforation of the bronchus. The procedure is simple does not require any special instrument and can be finished in the shortest possible time. It provides

for the approximation of endothelial surfaces similar to that of tuned in operations on the gastro-intestinal tract or the blood vessel. MELIX R. H. & M.D.

#### Hart D. Acute Empyema Treatment by Continuous Tidal Irrigation and Drainage Dependent on Normal Respiratory Movements. *Arch. S.* 1928. 2:11-102

The advantages of the closed method of draining and irrigating an empyema cavity are summarized by the author as follows:

1. The method is simple and easy, the insertion of a tube through a trocar under local anesthesia requiring only a few minutes.
2. The pressure within the cavity can be released at any desired rate.
3. Little care in the form of dressing is necessary.
4. The cavity is not continually sucking air.
5. So long as the junction of the tube with the wall of the chest is air tight suction can be applied, the pressure within the empyema cavity being thereby reduced below the surrounding atmospheric pressure and the size of the cavity increased by the resulting expansion of the lung.

The arguments against the procedure are that the drainage is inadequate and the pus which becomes thick and the fibrin which collects in the tube cause a damming up of the infected fluid within the chest. Among the minor disadvantages are the presence of the tube which makes irrigation of the cavity slow and difficult the tendency as healing progresses to overdistend the cavity which is tending to collapse the leakage of pus around the tube which demands frequent dressings and the plugging of the tube which causes almost continuous irritation and annoyance to everyone concerned with the care of the patient.

The irrigation apparatus used by the author consists of a rubber tube which is passed into the dependent part of the empyema cavity through a trocar thoracotomy wound and just outside of the chest is connected by means of a T tube with a rubber bag on one side and with a rubber tube leading through a Y tube to an irrigation bottle above and a drainage bottle below on the other side. The rubber bag is strapped to the abdomen just below the trocar thoracotomy wound and slightly below the level of the empyema cavity when the patient is in a lower position. This gives a slight amount of suction at all times.

Early in the treatment when the cavity is large the fluid within the bag should be renewed every hour in order to keep the pus relatively thin. Later when the cavity has become small and clean it is necessary to refill the bag only a few times in twenty four hours.

The continuous movement of the fluid prevents the coagulation of fibrin and the killing of the tubercle bacilli as the cavity has been kept free in the drainage fluid at no time even with suction being too thick to allow the rays to transmit light through the glass connecting tubes.

Whenever desired suction may be applied to the cavity the nature of the residual fluid in the cavity determined and the cavity irrigated by allowing clear fluid to flow in when the suction is released.

In the treatment of acute empyema complicated by bronchial fistula the author uses a flask partially filled with irrigating fluid and connected by an opening at its dependent part to a short tube entering the empyema cavity. An irrigation bottle is connected with an opening at the top of the flask, while through a cork is passed a tube opening to the outside air and a siphon extending from the bottom of the flask to a drainage bottle.

The advantages of the continuous tidal irrigation method are summarized as follows:

1. The trocar thoracotomy subjects the patient to the minimal operative procedure.
2. As the irrigation tube practically never becomes plugged there is no obstruction to free drainage.
3. There is no large raw surface to become infected by the continual soiling at the time of and following operation.
4. As there is only late and negligible leakage around the tube in the thoracotomy wound dissecting infections do not occur and the necessity for dressings is practically eliminated.
5. Suction can be applied as desired when expansion of the lung is slow after long compression.
6. The apparatus which is used in cases with a bronchial fistula permits the immediate escape of air from the drainage system without allowing air to enter the chest or disturb the siphoning action.
7. The closing of the empyema cavity is more rapid than after early rib resection and open drainage.

MARLE R. HOOD, M.D.

### MISCELLANEOUS

Mellraith C. H. Turner W. and Illcks J. A. B.  
Thoracic and Abdominal Streptothrix. *Lancet*  
1928 ccxv 68.

The patient whose case is reported a woman twenty-four years of age attended a football game on the afternoon of December 12, 1925. That evening she felt cold and throughout the night she suffered from attacks of vomiting. The next morning she felt better but in the evening the vomiting recurred and was accompanied by pain in the abdomen. The patient was seen by Mellraith late that night. At examination no rigidity of the abdominal wall was found but slight tenderness was noted in the left iliac fossa. On rectal examination no tenderness or swelling could be discovered in the appendix region. The temperature was 99.8 degrees F.

The pain continued but the vomiting ceased on December 14. On December 16 a distinct swelling could be felt in the appendix region and the temperature was 98.8 degrees F. in the morning and 99.2 degrees F. in the evening.

On December 17 the appendix was removed in a state of early gangrene. After the operation convalescence appeared to be progressing normally for

ten days but on December 28 febrile symptoms developed and complaint was made of pain in the right lumbar region. The temperature continued to rise and the pain to increase.

On January 4, 1926 the right perinephric region was explored but nothing abnormal was found. This exploration was followed by a steady decrease in the pain and temperature until March 8 when pain developed in the suprapubic region and the temperature rose to 101 degrees F. Colon bacillus was found and treated by a vaccine. The pain and fever then gradually subsided and the urine became bacillus free.

In the latter part of April the patient went to the seaside and while there had a recurrence of the pain in the right lumbar region accompanied by fever. When she was brought home examination showed a marked diminution of movement in the right side of the chest and a decided bulging of the lower ribs on that side. Exploration of the chest revealed thick blood stained pus.

Turner saw the patient for the first time on May 26. On May 28 under general anesthesia a needle was introduced into the ninth interspace in the nipple line and blood stained pus was withdrawn. When portions of the eighth and ninth ribs were removed an abscess the size of an orange which opened into the pleura was found. The lower wall of the abscess was dome shaped and smooth. No communication through the diaphragm could be discovered although the liver dullness was definitely greater than normal. Actinomycosis was suspected and on bacteriological examination of the abscess contents this suspicion was confirmed. The abscess drained well but the temperature remained high and there was no improvement in the general condition.

In the middle of July a new swelling developed in the epigastrium and over the margin of the ribs and on July 30 Turner opened a second large abscess evidently situated between the liver and the diaphragm. From the contents of this abscess a vaccine was prepared and injections were given every five days beginning with a dose of 1 minim. The strength of the vaccine was 1 mgm. per cubic centimeter. The only apparent effect of the vaccine treatment was that the granulations of both operative wounds increased greatly and became very vascular. On August 12 12 minims were injected. The granulations were painted with a mixture of brilliant green and methyl violet in equal parts in a 5 per cent solution of alcohol and the abscess cavity was packed with strips of gauze soaked in the same solution.

On August 24 1 c.c. of the vaccine was given and it was decided to discontinue the large doses of iodine preparations which throughout the illness had been given by mouth because no intravenous injections could be made as it was impossible to distend any of the superficial veins sufficiently.

No progress was made up to September 17. On that date the patient was seen by Symonds. There

was then a bulging in the side behind the first operative wound and the formation of another abscess in this position seemed probable. It was decided to continue the vaccine treatment and await further developments. Twenty minims were given on September 28 and 22 minims on October 1. On the latter date the temperature reached normal for the first time since April and after October 7 it showed no evening rise. The granulations had by this time completely disappeared leaving a healthy sinus from front to back and the swelling in the side was much smaller. The vaccine was injected weekly until the end of October and then every two weeks. By November 4 the sinus had closed. Thereafter vaccine treatment was continued at monthly intervals until June 1927.

The patient is now in perfect health and able to carry on her duties as a nurse.

Hicks describes the preparation of the vaccine as follows:

A fairly abundant growth of the streptothrix was obtained in glucose broth under anaerobic conditions (Macintosh and Lides jar). Subcultures (fortunately luxuriant) were only obtained on the first occasion; all attempts to raise a second series failing. After centrifuging down from the broth cultures the streptothrix was washed several times in saline. The supernatant saline was removed from the last washing as far as possible to the last drop, the resultant wet mass being ground up in a small sterile agate mortar. This squeezed out a certain amount more fluid which was dried off in an oven, taking great care not to dry out the mass completely. A slightly moist mass resulted which could be weighed and an original stock suspension was made up of a strength of 1 mgm. per cubic centimeter of which the patient had an initial dose of 0.05 mgm. in August. Later on (October) in the course of the disease the stock was increased to 4 mgm. per cubic centimeter.

McLeith has seen a number of cases of streptothrix infection of abdominal and thoracic regions but has never seen one clear up on iodine or iodides.

In the case reported the brilliant green and methyl iodine mixture kept the wound clean and lessened the exuberance of the granulations but there was evidence that the vaccine was the deciding factor in the cure. Soon after the vaccine was started the granulations became vascular and large a sign of progress in healing as the granulations in streptothrix infection are not particularly vascular. Moreover in the latter part of September a swelling was developing in the region of the original operative wound. At this time the vaccine had been pushed up to 1 mgm. of the streptothrix mass and immediately after this dosage was reached the temperature began to approach normal and the swelling to subside. The increase in the dosage was continued systematically and carefully until the patient was taking 4 mgm. of the streptothrix mass. Apparently therefore large doses are easily tolerated.

JOHN J. MALONEY, M.D.

Alexander, J. A Brief Survey of Thoracic Surgery. *J. Michigan State M. Soc.* 1928, xxi:443.

The author discusses chiefly the surgery of empyema, pulmonary tuberculosis, bronchiectasis, lung abscess and cancer of the esophagus.

He states that the main reason for the gravity of acute empyema is probably that the condition is not diagnosed until too late. Before adhesions have formed the treatment indicated is prompt and repeated needle aspirations of the fluid or preferably the air tight introduction through a cannula of a drainage tube and a small rubber tube for frequent antiseptic irrigations. In the cases of children such treatment is usually sufficient but in the cases of adults rib resection is commonly necessary later.

The principal avoidable cause of chronic empyema is improper drainage. The drainage tubes should not be removed until the intrathoracic cavity has been entirely obliterated. In a large majority of cases prolonged adequate drainage and antiseptic irrigations of a chronic cavity that has been inadequately drained result in a marked decrease in the size of the cavity and its complete disappearance. Cavities that fail to close under this treatment require radical surgical measures to permit the lung to expand to the chest wall or to bring the chest wall down to the collapsed lung.

In pulmonary tuberculosis the purpose of surgical treatment is to place the diseased lung at rest from its constant respiratory movements and more or less to obliterate the cavities that are often present. The simplest method of obtaining compression of the lung is artificial pneumothorax. In cases in which pleural adhesions prevent adequate compression of the lung, phrenicotomy will often bring about the desired result. Extrapleural thoracoplasty compresses the lung and is to be used when other methods are not available. In the cases of three patients who were not proper subjects for thoracoplasty, Alexander obtained good results by combining phrenicotomy with removal of the posterior sections of eight or nine intercostal nerves thereby causing respiratory quiet and a certain amount of lung compression or relaxation.

In bronchiectasis and lung abscess surgical treatment is indicated when conservative treatment fails to cause improvement. The surgical measures usually to be considered are:

1. Artificial pneumothorax. This gives its best results in recent suppuration near the hilum.

2. Phrenicotomy. Indicated especially for lesions in the lower half of the lung.

3. Caustic drainage through the chest wall. This is indicated for peripheral lesions.

In chronic cases extensive extrapleural thoracoplasty or extrapleural pneumolysis is indicated.

With regard to cancer of the esophagus the author states that technically satisfactory methods for resection of the cervical or thoracic portions of the esophagus have been worked out and have been used successfully in about six cases.

RALPH B. BETTMAN, M.D.

# SURGERY OF THE ABDOMEN

## GASTRO INTESTINAL TRACT

Bolton C. The Interpretation of Gastric Symptoms. I. The Mechanism of the Production of Pain. II. Analysis of Cases of Pain. *Lancet* 1919 CCXIV 1159 1215 1 63

Cases of dyspepsia are classified clinically according to groups of symptoms each of which is the clinical expression of a functional disorder of a particular part of the stomach. The causes may be organic or not. The cases are divided also into those in which the stomach is structurally normal and those in which it is structurally abnormal. This classification is based on a study of 1000 cases of gastric disturbances in which the stomach was capable of performing and periodically did perform its functions normally.

The symptoms constituting dyspepsia are due not to an alteration in the secretion of gastric juice but to alterations in the motor function of the stomach. Visceral symptoms in general are almost entirely muscular in origin. Muscular sensations are classified into two groups: (1) minor sensations such as discomfort and a sensation of weight and fullness, and (2) pain. The difference is only in the degree of the intensity of the stimulus which depends upon the stability of the nervous system. Stretching acts as a stimulus to smooth muscle and if it is gradual the muscle elongates to some extent. At a certain point however contractions begin. Rapid tonic and rhythmic contractions begin at once but finally cease if the stretching process is kept up. As in acute dilatation the stomach may be stretched to enormous limits without pain. In atonic conditions of the stomach there is no pain because the muscle fiber is unable to recover its normal tone. Payne and Boulton believe that when the walls of an organ are stretched all of the structures forming it—muscle fiber and nerve endings take up the tension and that pain is due to stretching of the nerve endings that subserve the sense of pain. If the muscle contracts it overcomes the stretch and takes the strain off the nerve endings but the tension in the muscle fiber is further increased by this act. A muscle may lengthen or shorten without appreciably lessening or increasing its contraction tension. The body of the stomach is able to accommodate itself as it is filled by a lengthening reaction and similarly as it empties and its contents diminish in volume by a shortening reaction. Any interference with the postural adaptation of the musculature results in an increase in the contraction tension of the fibers and discomfort or pain. Interference may be caused by irritability of the neuromuscular mechanism by too rapidly filling or by a decrease in the tone of the muscle.

The minor sensations felt in dyspepsia are all local and merely an exaggeration of the normal feelings experienced by healthy persons. They never radiate.

The areas in which the pain of dyspepsia occurs are oesophageal and gastric. The former extends from the root of the neck to the ensiform process and is further divided into an upper and lower part by the sternum at the level of the fourth costal cartilage. The latter includes the area between the ensiform process and the umbilicus. The sterno-umbilical region is divided into three parts: an upper, a middle, and a lower portion. Early pain at the highest level suggests disordered action of the oesophagus and late pain at the lowest level disturbance of the pylorus while symptoms occurring in an intermediate position either early or late suggest a disorder of the mechanism of the body of the stomach.

In cases of chronic dyspepsia periods of relative or absolute freedom from pain occur from time to time. It makes no difference whether the patient is suffering from an organic lesion or from a simple functional disturbance. The free intervals are due to treatment or re-establishment of the normal stability of the nervous system by rest, etc.

From a study of 715 cases with pain in various areas the following conclusions are drawn:

1. There is no difference between minor sensations and pain as regards their significance; the one merges into the other and they are both due to abnormal contraction tension of the muscle fiber.

2. The position of the pain and the time of its onset after eating definitely indicate the part of the apparatus affected and the mechanism disordered.

3. Pyloric pain occurs across the abdomen in the transpyloric line as a band or as a localized area in the center or at one or both ends of this line where it cuts the costal margin across the abdomen between the transpyloric line and the umbilicus as a band or an isolated area in the center but quite as frequently to one or the other side particularly the right and behind from about the eighth dorsal to the second lumbar spine. The pain characteristically occurs late in the digestive process.

4. In disorders of the body of the stomach and the lower part of the oesophagus the pain occurs between the transpyloric line and the line of the fourth costal cartilage as a band or localized area in the center or to one side particularly in the middle line or along the upper costal margin. Pain between the transpyloric line and the ensiform definitely indicates a disturbance in the body of the stomach and pain above this area a disturbance in the lower oesophagus but oesophageal pain may encroach on the stomach area to some extent. Behind the painful area occurs opposite the lower two thirds of the



scapula and extends down to about the tenth dorsal spine. In disturbances of the body of the stomach the pain occurs either in the early stage of digestion irregularly or in the later stages although not so late as pyloric pain. Esophageal pain is less likely to occur late than early or irregularly.

5. Disturbances in the upper esophagus are associated with pain above the fourth costal cartilage in front usually in the center and sometimes opposite the upper two thirds of the scapula behind. The pain nearly always occurs soon after food is taken or irregularly.

6. In neuropathic patients the esophagus and body of the stomach are the parts most likely to be affected.

7. As the malady progresses most cases tend to show an increasing irritability of the nervous system. Accordingly, there is no sharp line of demarcation between dyspepsia in a person of average nervous stability from that in a neuropathic person.

Bolton discusses pain also from the standpoint of its relief by emptying of the stomach and its relief by food. The conclusion is drawn that pain may be relieved by food whatever part of the apparatus is affected and at whatever time the pain occurs. Complete relief is much more likely to be obtained when the pain begins late whatever part is affected but pyloric pain and its secondary consequences on the body of the stomach and esophagus are most likely to be relieved. Pain occurring early or irregularly after the ingestion of food is unlikely to be relieved by food or is relieved by it only temporarily or partially. If over action of the neuromuscular mechanism is the cause of gastric pain at various stages of digestion cessation of this over action relieves the pain. It has been shown that a mechanism for inhibiting the muscular movements exists and is brought into play in the normal filling of the stomach. This normal inhibiting mechanism must be called into action also in the condition of irritability of the stomach but with varying degrees of success according to the ability of the muscle fiber to respond normally. Primary cardiac and esophageal disturbances in which irritability is most common are less likely to be relieved by food than pyloric disturbances. The later the pain begins the less irritable the neuromuscular mechanism and the better it responds by a lengthening reaction to the introduction of food. Therefore the pyloric type of case usually relieves more easily.

Eruetation is due to excessive pressure in the stomach in relation to the tone of the cardiac sphincter. The material eructated depends upon the contents of the stomach. Acid eructation is more common in pyloric than in cardiac or esophageal disturbances.

Vomiting relieves the symptoms if the stomach is completely emptied unless there is marked nervous irritability of the stomach. It is of the same frequency in pyloric and cardiac disturbances.

Uncomplicated ulcer on whichever side of the pylorus it is situated causes the same irritability of

the sphincter and therefore pyloric pain. Irritability of the stomach may arise as a reflex effect from some other organ especially the gall bladder and the intestines.

From a consideration of the position the time of onset and the relief of pain the conclusion is drawn that cases of dyspepsia may be divided into three main groups—the pyloric, the cardiac and the esophageal syndromes—and that each of these syndromes has several subtypes. There is clinical evidence that pyloric disorder produces backward effects upon the body of the stomach and the esophagus and that cardiac disorder exerts an effect upon the esophagus. If the patient has neuropathic tendencies the symptoms are modified in certain ways. In neuropathic persons the body of the stomach and the esophagus are more likely to be disturbed than the pyloric region. The chief clinical phenomena of these types of disorder are as follows:

**Pyloric syndrome.** Pain begins in the pyloric area during the later stages of digestion and is accompanied by secondary cardiac symptoms either an empty hungry feeling or a sensation of fullness or of pain. In some cases vomiting occurs. Pyloric pain may be absent and secondary cardiac symptoms alone may be present. In all types of cases eructations and secondary esophageal symptoms commonly occur. The symptoms in all cases are relieved by food.

**Cardiac syndrome.** Pain or fullness begins in the cardiac area during the early stages of digestion moderately late or irregularly. In some cases the pain is accompanied by vomiting. Secondary esophageal symptoms are common and the fluid eructate is more likely to be bitter or neutral than acid. The symptoms may or may not be relieved by food.

**Esophageal syndrome.** The esophageal syndrome is either primary or secondary and consists of pain or one of the minor sensations in the esophageal area. The upper and lower parts of the esophagus differ in that the symptoms of disturbances of the lower part show to a considerable extent a time relation to food similar to that of disturbances in the body of the stomach whereas the symptoms of disturbances in the upper part usually appear quite early or irregularly. The symptoms of disturbances of the lower part may or may not be relieved by food but the relief of symptoms of disturbances of the upper part is usually only temporary or partial. Vomiting of the same nature as that of the cardiac syndrome may occur from the regurgitation of fluid.

Disorders of function due to local disease not altering the stomach structurally are of the same nature as those caused by the idiopathic malady affecting the same part of the stomach. Disorders of function due primarily to reflex irritability of the stomach are also the same as those of idiopathic origin and affect one or another part of the stomach chiefly but not exclusively.

The causes of the pyloric syndrome may be in digestible and irritating food hyperacidity of the

gastric contents and instability of the nervous system. The reflex mechanism controlling the pylorus may be rendered unstable by (1) a direct effect exerted upon the mesenteric plexus by ulcer or gastritis (2) reflex irritation from the colon or (3) instability of the central nervous system. Whatever the cause, the effect produced is the same. The pylorus is interfered with first in its capacity of regulator of the output of food and next in its capacity of regulator of the acidity of the gastric contents. It regulates gastric acidity by relaxing and permitting the regurgitation of the alkaline duodenal contents into the stomach at a certain stage of digestion.

The cause of the cardiac syndrome are the bolting of food which does not allow the stomach to accommodate itself to filling in a normal manner and irritability of the neuromuscular mechanism or atony. When the stomach is filled too rapidly the muscle fibers are unable to undergo the normal lengthening reaction and react too strongly with the result that the intragastric pressure rises, the contraction tension is raised and a sense of fullness is produced. With increased irritability the mechanism is much the same.

The function of the body of the stomach during gastric emptying is to maintain a constant pressure upon the food which keeps the pyloric vestibule full. The pressure in the body of the stomach is maintained at a constant level by the capacity of the muscle fibers to undergo a shortening reaction without any increase of their contraction tension. When the neuromuscular mechanism is irritable these movements are exaggerated, there is a general increase in the tonic contraction with an increase of the variation which in some cases amounts to gastropasm. The earlier the pain begins the more likely it is to depend upon irritability of the central nervous system, and the later it appears the more it depends upon the irritating acid contents of the stomach. Alkalies will relieve the symptoms in these cases.

The esophageal syndrome is caused by the presence of liquids, gas or solid material which give rise to reflex tonic rings and peristalsis. Their presence is caused by regurgitation from the stomach or abnormal deglutition. The regurgitation may be brought about by an increase in the intragastric pressure or the external pressure.

JOHN A. WOLPER, M.D.

Catewood, W. F., Gaebler, O. H., Muntwyler, E., and Myers, V. C. Alkalosis in Patients with Peptic Ulcer. *Arch. Int. Med.* 1928, xl, 79.

The first detailed observations concerning the intoxication produced by the administration of large amounts of alkali in the Sippy treatment were reported in 1923 by Hardt and Rivers, who called attention to the fact that patients with duodenal ulcer treated by this method may develop definite symptoms of toxemia associated with renal changes, increased blood urea, and normal or increased com-

binating power of the plasma. Soon thereafter Brown, Rowntree and others from the Mayo Clinic published a report concerning toxemia occurring in pyloric and duodenal obstruction. They stated that duodenal toxemia is characterized by a clinical syndrome, urinary changes, pathognomonic changes in the chemistry of the blood, a decrease in renal function and in cases of death, pathological changes in the kidney. A comparison of the findings of duodenal toxemia with the toxemia encountered in the alkali treatment of persons with peptic ulcer suggested that the alkalosis might be quite as important an etiological factor in the toxemia of duodenal obstruction as the supposed specific toxin absorbed from the gastro-intestinal tract.

As sodium bicarbonate is responsible for the alkalosis in most instances, an effort has been made to neutralize the hydrochloric acid by other antacids. Greenwald suggested tertiary phosphates of magnesium and calcium. Symptoms of alkalosis were not observed following the use of these salts although they were shown to act efficiently in neutralizing the hydrochloric acid.

The earlier reports on alkalosis did not include the estimation of the hydrogen ion concentration of the blood although when the carbon dioxide combining power was estimated it was found to be high. Apparently the first determinations of the hydrogen ion concentration of the blood in alkalosis due to the administration of sodium bicarbonate were made in 1923 by Binger and others. This concentration was found to be 7.55, proving the presence of uncompensated alkalosis. Later Kast and others reported observations in twenty cases of alkalosis in which the highest hydrogen ion concentration in the blood was 7.6.

Poisoning by sodium bicarbonate causes nervousness and irritability followed by headache, nausea, vomiting, vertigo, aching pains in the muscles and the joints, weakness progressing to absolute prostration, drowsiness from which the patient can be aroused only with difficulty, and finally tetany and convulsions.

Uremic symptoms with epileptiform convulsions occurring in pyloric obstruction in patients who were not given alkalis were attributed by Houghton and Venables to loss of hydrochloric acid in the vomitus and a toxic degenerative nephritis with retention of nitrogen. These writers emphasized the nitrogen retention in the blood rather than the alkalemia. Their laboratory data included only figures for the blood urea. In all of their cases the blood urea was elevated. By some the toxic nephritis has been attributed to a specific toxin entering the circulation from the wall of the obstructed duodenum, but the increase in the urea and non-protein nitrogen in the blood has been observed in marked alkalosis in patients both with and without obstruction. It seems likely that at least a part of the increase in the non-protein nitrogen is due to a systemic change with excessive protein destruction rather than to renal retention although in most severe forms of alkalosis a well

defined nephritis occurs as one of the complications of the intoxication.

In a recent study of forty one cases of peptic ulcer under Sippy treatment Jordan found that in the small percentage that presented clinical signs of alkalemia the carbon dioxide content of the blood showed a marked rise (the calcium content tends to rise and the plasma chlorine decreased). The level of the carbon dioxide content at which symptoms appeared in these cases was 50 per cent by volume.

In a study of forty six cases of peptic ulcer treated with alkalis Cline and his associates found a definite correlation between the alkalemia and a group of clinical symptoms that were chiefly nervous in character. In about two third of the cases the blood at some time showed a high carbon dioxide content or hydrogen ion concentration of 10th and twenty one showed an uncompensated alkali (as indicated by hydrogen ion concentration values of 7.48 or above may be taken as a reliable level). In seventeen cases in which the carbon dioxide content ranged from 68.3 to 91.0 per cent by volume the hydrogen ion concentration ranged from 7.32 to 7.46 and therefore at the time of these determinations the alkali was compensated.

In a study of the plasma chlorides it was found that in ten cases in which the carbon dioxide content was high the plasma chlorides averaged 558 mgm per 100 cc m. compared with an average of 504 mgm in fifteen normal sera made in cases with normal chloride values the difference being 53 mgm. Clinically the disagreeable symptoms of alkalosis were noted most commonly when the plasma chlorides were low and marked improvement was noted when sodium chloride was administered especially when it was given intravenously.

When alkalis are used in such amounts as are commonly employed in the treatment of peptic ulcer by the Sippy method characteristic changes in the blood chemistry are almost always produced even though the symptoms of alkalosis may not occur. When calcium carbonate and magnesium oxide are employed without sodium in this treatment the alkalemia is decidedly less severe and the clinical symptoms of alkalosis are unlikely to appear especially if the complications of obstruction and vomiting do not occur. The changes produced by the alkalis are most marked at the end of the day. During the night the condition tends to return to normal.

In the authors study there was no definite evidence that the alkalemia in the degree observed was productive of renal damage.

In conclusion the authors emphasize the importance of administering water and sodium chloride to patients suffering from alkalosis especially as a preoperative and postoperative measure. When patients who have been receiving alkalis as a part of the treatment for ulcer consent to surgical treatment the alkalis should be omitted for at least several days before the operation.

MANUEL L. LILIENTHAIN, M.D.

# Pölyá J. Surgery of Gastric Duodenal and Jejunal Ulcer (Die Chirurgie des Magen Duodenal und Jejunumgeschwüres). *Therapia* 1928 v 1

There is no difference of opinion between internists and surgeons as to the necessity of operation in cases of perforation into the free abdominal cavity or cases of so called pyloric stenosis which is with a duodenal stenosis. Operation is generally believed to be indicated also in cases of abscesses, fistulae resulting from the perforation of a peptic ulcer or gastric stomach and the less well known stricture (shrinkage of the lesser curvature resulting in approximation of the pylorus to the cardia without shortening of the greater curvature) conditions which offer as much obstruction to the passage of the food as pyloric or duodenal stenosis. On the other hand the advisability of surgical intervention in acute ulcer hemorrhage is debatable. The difficulties in the diagnosis as well as those arising during the course of operation must be taken into consideration. The discovery of the bleeding point and arrest of the hemorrhage after this point is found may often be most difficult or at least require a procedure which the exhausted patient can scarcely be expected to withstand. On the other hand most ulcer hemorrhages cease spontaneously if the eroded vessel is not a large one and if it is a large one surgical assistance is usually too late. Therefore during an acute hemorrhage from ulcer and during the acute anemia which results from it operation should be avoided if possible. The question to be decided most frequently however is whether an ulcer which produces none of the complications mentioned but only pain or constant small or profuse recurrent hemorrhages should be operated upon.

Unfortunately the pathogenesis of ulcer disease is not yet well understood and treatment even surgical treatment is essentially empirical although we are today much better informed as to the physiological results of the various procedures than we were a few years ago. The various methods which have been recommended for excision or exclusion of the peptic ulcer have a more or less profound influence on the motor and secretory function of the stomach and this fact must be borne in mind not only in the choice of the procedure but also in the determination of the operability of a given case.

Clinical experience as well as experimental evidence indicates that resection even extensive resection is the operation of choice for peptic ulcer. In mild cases this procedure is no harder on the patient than gastroenterostomy and in more severe cases—those of callous ulcer jejunal ulcer etc.—little or nothing can be expected from gastroenterostomy. Moreover the danger of recurrence is considerably less after resection of the stomach which removes the pylorus and antrum than after other procedure. While the removal of a very large portion of the stomach always causes a loss of function this loss is not to be compared with the sufferings and dangers caused by the ulcer. However the

cases must be carefully selected for the operation as the procedure is too formidable to be permissible when there are only mild disturbances or doubtful findings.

For cillous ulcers especially of the stomach and for all types of ulcer of the jejunum operation is definitely indicated on account of the danger of cancer. Conservative treatment is warranted most frequently in cases of duodenal ulcer. If the patient with a duodenal ulcer reacts well to diet and medical treatment and thereafter remains well and able to work operation is not advisable. On the other hand when the condition responds to internal treatment only slightly or not at all when the disturbance recurs quickly when the diet must be such as lessens the patient's capacity for work and when there is continuous or recurring hæmorrhage with the danger of developing morphinism and a roentgenologically demonstrable severe lesion such as perforation or stenosis surgical treatment is imperative. (OLYA) (2)

#### Coffey R. G. Chronic Peptic Ulcer. Record of a Personal Experience. J. S. W. 1928 201 1

The author reviews his results in a series of 471 cases of ulcer operated upon in a period of twenty-four years. The mortality of 375 gastro-enterostomies was 2.4 per cent and that of 96 operations other than gastro-enterostomy 17.4 per cent. The discrepancy is more apparent than real however as the gastro-enterostomies were performed largely for duodenal ulcer which is less serious than gastric ulcer and the cases in which radical operations were done included most of the gastric and bleeding ulcers.

In 1917 appalled by his early mortality the author turned to more conservative procedures. He therefore divides his series into 147 cases treated before and 324 cases treated since 1917. The mortality in the recent group was 2.46 per cent where as the total mortality for twenty-four years in 471 cases was 4.2 per cent. In 204 recent gastro-enterostomies the mortality was 1.7 per cent as compared with 2.4 per cent in the entire series of gastro-enterostomies. In the recent period 30 operations other than gastro-enterostomy resulted in 3 deaths but these fatalities were those of patients with syphilis, alcoholism or anaemia.

In the author's opinion the results obtained in cases of duodenal ulcer by excision combined with gastro-enterostomy are no better than those obtained by gastro-enterostomy alone even in cases of bleeding ulcer. For early ulcers he advocates the Sippy treatment with the removal of infectious foci but he believes that in cases of long standing ulcer surgery is necessary. In the latter gastro-enterostomy facilitates emptying of the stomach, dilution of juices and rest of the ulcer.

The author's gastro-enterostomy technique is a composite of others. One of several incisions is used. An anterior duodenal ulcer is covered with omentum or excised before the gastro-enterostomy is done but

if a gastric ulcer is to be excised the gastro-enterostomy is done first so that excision may be postponed if necessary. The stomach is drawn through the mesocolon to the left of the middle colic artery and grasped with Allis forceps near the lowest point of the greater curvature and again caudad and toward the middle of the stomach. The jejunum is directed toward the left and grasped with Allis forceps. Two linen traction sutures at the sites of the angles of the future anastomosis are secured to a Lang traction suture frame. Two posterior rows of interrupted sutures of fine linen are placed near the mesenteric border. After the incisions for the anastomosis have been made a continuous lock stitch of double No. 0 chromic catgut including all the layers is introduced. This stitch is begun at the end of the incision nearest the operator and is continued almost around the front half of the anastomosis. In the closure of the last half inch of the incision the right angle stitch is necessary. For strength in hæmostasis the continuous running catgut suture is usually returned across the front line. An anterior row of interrupted linen sutures is then introduced. The mesocolon is attached to the stomach and if long enough is also sutured across the anastomosis to the jejunum. (BURTON CLARK JR. MD)

#### Tanasesco. Two Hundred and Twenty Six Operations for Gastric or Duodenal Ulcer (226 opérations pour ulcère gastrique ou duodénal). Bull. et mém. Soc. nat. de chir. 1928 liv. 933

The statistics on a series of gastric operations for ulcer are given in detail. The total operative mortality was 6.10 per cent.

In 105 cases of pyloric ulcer the author performed 46 simple posterior gastro-enterostomies, 48 gastro-enterostomy with exclusion of the pylorus by ligation and 11 gastropyloroplastomies.

In the 46 cases of simple gastro-enterostomy the mortality was 4.34 per cent. Of 19 patients who could be followed for periods ranging from one to seven years 57.8 per cent were cured, 15.71 per cent were benefited and 6.3 per cent had received no benefit.

In the 48 cases treated by gastro-enterostomy with exclusion of the pylorus the immediate mortality was 4.76 per cent. Of 19 patients who were seen again during the next seven years following the treatment 55.5 per cent were cured, 24.8 per cent were benefited and 20.6 per cent were not benefited.

In the 17 cases in which a gastropyloroplastomy was done the mortality was 0.90 per cent. The technique employed was the following: Billroth II, 8 cases; Kroenlein-Mikulicz, 7 cases; Olya, 7 cases; Finsterlin, 1 case. Of the 6 patients who could be followed all were cured.

In 55 cases of duodenal ulcer 21 simple gastro-enterostomies, 29 gastro-enterostomies with exclusion of the pylorus and 5 gastropyloroplastomies were done. There were no deaths in any of these cases.

Of the 17 patients treated by simple gastro-enterostomy who could be traced 72 per cent were cured, 9

per cent were benefited and 18 per cent were not benefited.

Of 16 patients treated by gastro-enterostomy with exclusion of the pylorus who returned for observation within a period of seven years 50 per cent were cured 18.7 per cent were benefited and 31 per cent were not benefited. One of these who were not benefited developed a jejunal ulcer another was treated by enervation (1 target's operation).

Of the 4 patients treated by gastropylorostomy who could be traced 3 were cured and 1 was benefited. These patients could not be traced after two years.

Of 53 cases of ulcer of the lesser curvature 24 were treated by gastro-enterostomy 13 by resection with longitudinal suture 3 by resection with gastro-enterostomy 6 by cauterization (Balfour) and 7 by gastrectomy.

In the 24 cases in which gastro-enterostomy was done there was a mortality of 22.5 per cent. Of the 17 patients who were traced 41 per cent were cured 11.7 per cent benefited and 47 per cent unrelieved. This group proves as has been claimed by Hartmann that gastro-enterostomy is of value in cases of ulcer of the body of the stomach even when the pylorus is patent.

In the 13 cases of saddle resection of the lesser curvature the mortality was 15.38 per cent. Of the 11 patients followed up 2 were cured 4 were benefited and 5 were not benefited. The period of observation ranged from eighteen months to five years. One patient with a poor result was cured by gastro-enterostomy. From these cases it appears that resection alone is a poor operation and should be combined with gastro-enterostomy.

In the 3 cases which were treated by resection with gastro-enterostomy there were 2 cures and 1 death.

Of the 6 patients treated by the cautery method of Balfour 1 died. Of the others 1 was cured 2 were benefited and 2 were not benefited. In these cases the period of observation ranged up to six years.

In the 7 cases treated by gastrectomy there were 2 deaths and 5 complete cures.

The more radical operations evidently give the best late results but their mortality is high.

Two jejunal ulcers which occurred six and seven years after gastro-enterostomy were cured by gastropylorostomy and a Y anastomosis.

Six cases of multiple ulcer were treated variously. In 3 cases a gastro-enterostomy was done and the patients were found to be cured when seen two three and four years respectively after the operation. In each case there was a pyloric ulcer combined with 1 or more ulcers of the lesser curvature. One patient was treated by cauterization and another by local resection and gastro-enterostomy but neither could be traced subsequently. In 1 case a segmentary resection (Kroenlein Mikulicz) gave a good result after three months.

Of 3 patients with isolated ulcers of the lesser curvature who were treated by gastro-enterostomy 1

was cured and 2 were benefited for four and 12 years respectively and 1 could not be traced.

An hour glass stomach was cured (one year) by gastropylorostomy. ALBERT F. DE CROIX M.D.

#### Like N. C. The Later Results of Partial Gastrectomy. La cel 1913 cxxv 168

The surgical procedures possible in the treatment of non malignant ulceration of the stomach are (1) posterior gastro-enterostomy (2) anterior gastro-enterostomy (3) gastro-enterostomy with pyloric exclusion or entero-anastomosis (4) Finney's operation (5) local excision by knife or cautery (6) local excision and gastro-enterostomy (7) leave resection (8) partial gastrectomy (Billroth I and II) (9) and its modifications (10) jejunostomy and (11) denervation. Of these the author compares only gastro-enterostomy and partial gastrectomy the indications for the others falling outside the scope of the article.

The cases reviewed were treated in the period from 1922 to 1927. The total number of gastric operations was 221. Sixty five of the operations were partial gastrectomies and 71 were gastro-enterostomies. However the percentage of gastrectomies rose from 5 in the cases treated during 1922 to 62 in those treated during 1927. The results of gastro-enterostomy and partial gastrectomy for simple ulcer are summarized as follows.

PARTIAL GASTRECTOMY		P e nt
Sati factory + +	761	
Sat factory +	191	95
Sati factory	2	5
Unsati factory	3	5
Unsati factory +	0	
GASTRO-ENTEROSTOMY		
Sati factory + +	431	51
Sati factory +	6	
Sati factory	12	
Unsati factory	21	
Unsatisfactory +	15	

All of the patients subjected to gastrectomy have gained weight since the operation and look remarkably healthy.

Fractional test meals were carried out shortly after the operation in practically all cases and with one exception showed complete achlorhydria. Fractional test meals after an interval of several years demonstrated quite conclusively that the achlorhydria is permanent. None showed the slightest trace of free hydrochloric acid. The average total acid was less than 10. In the absence of bile the average total chlorides was 29 and when bile was present over 70.

Bacteriological examination of the teeth gums tonsils and throat in a series of cases yielded streptococci in several but in no case were the microorganisms hemolytic.

In the cases in which gastrectomy was done there is no sign of primary anemia although the hemoglobin and color index are rather below normal. The

total leucocyte count is normal but the polymorpho-nuclears are perhaps slightly low. The author concludes therefore that these cases present no indication of a deleterious effect of achlorhydria upon the blood count.

On the whole it seems that there is no indication that gastrectomy is followed by remote deleterious effects.

In most of the cases general anesthesia was induced by the intratracheal administration of ether or chloroform.

Lake calls attention to the fact that almost all patients with a long history present evidence of multiple ulcers either active or healed and that in such cases we are dealing not with a lesion of local origin but with a condition of the stomach which predisposes to ulceration and of which the ulcer itself is but a manifestation. The occurrence of jejunal ulceration after gastro-enterostomy for ulcer and the absence of such ulceration after the same operation for carcinoma favor the view that the contents of the stomach are responsible.

Partial gastrectomy is the only operation which removes the cause of the ulceration in the majority of cases and can be trusted to result in permanent cure. However the author does not perform it in all cases of gastric and duodenal ulceration. Early cases he treats medically in the hope that some change may thus be effected in the secretory activities of the stomach. He believes that in cases of simple duodenal ulceration with a short history partial gastrectomy is unnecessarily severe and a safe gastro-enterostomy so frequently relieves the symptoms. In such cases the acid content is not always high and may therefore be sufficiently reduced by partial neutralization. However if the pre-operative test meal reveals a high acid content it is probably wise even in these cases to perform a partial gastrectomy in order to prevent further ulceration.

CARL R. STEINKE, M.D.

#### Rankin F. W. An Aseptic Method of Intestinal Anastomosis. *St. J. Gynec. & Obst.* 1918, xlvii, 73.

According to findings made by Halsted, Mall, Hertzler and others with regard to the healing of intestinal wounds regenerative changes demonstrate that if there is no infection the healing of the peritoneal wound takes place by direct transformation of lymph into connective tissue without the granulation tissue stage. Another observation that has proved of aid in intestinal anastomosis is the occurrence of agglutination of the resected ends of the intestines when firm pressure is applied. Mall's experiments showed that under pressure the diaphragm formed by the turning in of the margins becomes destroyed by necrosis and at the end of the fifth day the slough separates usually leaving a clean surface. At the end of about three weeks the muscularis mucosae is completely regenerated and the raw surfaces of the anastomosis are covered over. The sloughing away of this diaphragm sometimes has been accompanied by secondary hemorrhage

which occasionally has been fatal but this is exceptionally rare. Quick healing of intestinal wounds occurs when the peritoneal surfaces are approximated and the sutures are placed only deep enough to catch the submucosa, the most important structure in the anastomosis.

The author has devised a clamp which may be a valuable addition to the surgeon's armamentarium. Among its advantages are simplicity of arrangement and ease of application and manipulation. Rankin has found it of great aid in joining the large bowel end to end or side to side and the large and small bowel end to end and has used it successfully in twelve resections of the colon in which these three types of anastomosis were carried out. Secondary hemorrhage or the formation of a diaphragm in the lumen has not occurred in any of the cases.

The instrument is a three-bladed clamp sufficiently short for adaptability and readily mobile. The central blade is the fixed point against which the two lateral blades operate independently. The fulcrum which permits steady pressure is in the handle there is a fulcrum on each side of the clamp. The length of the entire clamp from tip to tip is 22.5 cm. Each blade is 5 cm. long and the central blade is 0.5 cm. wide. The blade portion when closed is 8 mm. deep. When the clamp is in use the posterior peritoneal coats of the two arms of the bowel are in direct approximation separated only 0.5 cm. by the central blade and the anterior surfaces of the two limbs of the bowel to be anastomosed are separated by the entire thickness of the clamp. After the application of the suture which covers the point of the clamp but is not drawn tight over the handle portion until the latter is withdrawn the limbs of the resected ends are kept in accurate apposition by firm pressure and agglutination. On withdrawal of the clamp the end suture is put in and the whole line of sutures on the anterior surface is drawn taut without causing contamination. The diaphragm must be broken out with the fingers through the lumen.

Control of hemorrhage is dependent upon crushing of the vessels. Secondary hemorrhage has not occurred in the cases in which the author has used the clamp and he believes it is a much overestimated danger in closed anastomosis. The formation of a diaphragm after the operation has not been observed in the experimental laboratory nor in a series of resections in clinical cases.

In practically all cases in which an operation is performed on the left segment of the colon for a lesion that has produced long standing obstruction a two stage resection should be done. In the right segment of the colon it may sometimes be advisable to perform the one stage operation. However carcinoma in either arm of the colon presents a somewhat different problem from tuberculosis, stasis and other lesions requiring surgical intervention and the author has come to the conclusion that all carcinomata of the colon which cause obstruction should be operated upon in two stages.

A successful result following resection and anastomosis of the large bowel especially in malignancy probably depends more upon adequate pre-operative preparation and rehabilitation measures than on technical procedures. Disregard of the fact that virulent organisms have a normal habitat in the large bowel and increase in number and virulence when obstruction is present perhaps operates more against the success of operation than any other factor. Consequently adequate pre-operative preparation consisting in measures to cleanse the bowel followed by drainage procedures and a diet consisting mostly of carbohydrates and fruit juices which leave little residue greatly increases the chances of satisfactory recovery.

Highly satisfactory departures from the usual routine are graded operations performed under spinal anesthesia. Careful selection of cases for resection and the refusal of surgeons to operate in hopelessly advanced cases will lower the operative mortality in the whole group and result in a higher percentage of cures than the tendency to urge operation in cases in which the result will be uncertain. An increase in operability and the institution of more radical measures for resection may be accomplished only by attention to minute details.

**Crimault L.** Double Ulcer of the Duodenum in a Patient Twenty Years of Age. Duodenopylorotomy. Late Result. (*Ulcre double du duodenum chez un sujet d vingt an. duodeno-pylorotomie resultat (10 ans)*). *Hull et mem Soc med d chir* 1928 liv 941.

The case reported was that of a man twenty years of age who had suffered for seven years with severe intermittent gastric distress and icterus. For a month he had almost continual epigastric pain which was relieved somewhat by eating but became intolerable from three to four hours after meals. Hematemesis occurred at various times and acid eructations were frequent. A rapid loss of weight and deterioration of the general condition resulted in spite of vigorous medical treatment. Roentgenography showed a high degree of retention with deformity of the duodenal bulb and palpation at the site of the duodenal bulb revealed tenderness.

At operation an indurated ulcer of the duodenum the size of a quarter was found one finger's breadth from the pylorus. Adhesions were numerous and the regional lymph nodes were enlarged. Pylorotomy with section of the duodenum just beyond the ulcer was performed and followed by posterior gastroenterostomy. The patient made an uneventful recovery.

Examination of the resected duodenum showed two ulcers on opposite walls (the kissing ulcer of the English).

In the three years since the operation the patient has had no recurrence of his symptoms although his diet has never been restricted.

In the discussion of this case Crimault states that the youth of the patient was not exceptional as

there are numerous reports of peptic ulcers in adolescents. In the young however the condition is not usually recognizable before the onset of complications. Ulcer has been observed even in infants. The symptoms are usually simply hematemesis and melena. The type of ulcer is that which occurs with cachexia. As a rule the infant with peptic ulcer is between six and ten weeks of age.

Icterus accompanying duodenal lesions is of obscure etiology but is probably due to an ascending cholangitis caused by the duodenal infection or to the pressure of adhesions on the common duct. This form of icterus is of importance chiefly because it renders the diagnosis difficult.

In conclusion the author states that the frequency of multiple ulcers has not been appreciated until recently. When systematically looked for multiple ulcers are found often. Delore has reported sixty-eight cases. Lennox and Pinochietto give the incidence of multiple ulcers as 10 per cent. According to Mathieu it is 20 per cent.

ALBERT F. DE GROAT, M.D.

**Monivrat K. W.** The Surgical Treatment of Diverticulitis. *Frit J J* 1928 11 41.

From the point of view of the surgeon the following two questions are important: (1) In what proportion of cases is diverticulosis confined to the iliac and pelvic colon? (2) Is diverticulitis restricted as a rule to one limited section of the bowel or does it usually involve a considerable length of the colon?

Of the last 100 consecutive cases of diverticulosis seen by the author the condition had advanced to diverticulitis at 1 or more points in 16. In only 3 cases were the hypertrophic changes confined to the iliac and pelvic colon exclusively. In 13 of the 16 cases of diverticulitis the disease in the pelvic and iliac colon was associated with diverticulosis in other parts. In 4 cases less than 6 in. of bowel was hypertrophied. In the 4 others either more than 6 in. or more than one area was affected.

Diverticulitis is of 5 types: (1) acute diverticulitis (2) chronic diverticulitis (3) a perforative diverticulitis (4) chronic perforative diverticulitis and (5) diverticulitis with stenosis.

Acute diverticulitis is at first subacute. Vague abdominal pain increases in severity until at the end of about forty-eight hours the patient is acutely ill with severe localized pain, pyrexia and an increased pulse rate. On examination a large and extremely tender tumor is found usually in the left lower portion of the abdomen.

The chronic form of diverticulitis is the most common form. The symptoms are abdominal discomfort less often pain in the lower part of the abdomen at or about the umbilicus but especially in the left iliac fossa, general flatulence, a feeling of distention and constipation, irregularity of the bowel movements, diarrhoea or a sense of incomplete evacuation. Occasionally there is hemorrhage from the rectum. Except in obese persons a sausage-shaped tumor can be felt in the left iliac fossa.

Acute perforation may be the initial sign of diverticulitis. In the 4 cases of perforation in which the author has operated the duration of the symptoms before operation was six hours thirty six hours four days and one week. In 1 case the perforation occurred in the transverse colon in 1 case in the descending colon and in 2 cases in the pelvic colon. The sequelae of perforation are similar to those following perforation of the appendix. The peritonitis is of a severe type and may or may not become localized.

Cases of chronic perforation are those in which there is no sudden flooding of the peritoneum the perforation is shut off before it is complete and the typical sequel is an abscess. The condition is best described as chronic perforation with abscess. If we place in this group the cases in which no single gross perforation is demonstrable the group will include all cases of so called pericolic sinus and form the largest group treated surgically. Six of the author's cases were of this type.

Diverticulitis with stenosis is characterized by attacks of flatulent distention with colic. Such attacks are comparatively frequent in chronic diverticulitis. Usually they are subacute and can be warded off by diet. A physician who was subject to them was completely relieved during a month spent in Barcelona when he ate food cooked in oil as is the custom there. By continuing the same type of diet at home he has escaped further attacks. In Monsarrat's series of cases there were 4 of persistent subacute obstruction from stenosis.

With regard to surgical treatment the author states that in acute diverticulitis without complications no operation should be done unless unequivocal signs of abscess make their appearance. Resection of a long length of colon would be difficult and dangerous and would necessitate colostomy. Isolation of the inflamed bowel by wrapping it with omentum is unnecessary as the bowel can be trusted to isolate itself by adhesions. Exploration for a suspected abscess would probably leave a fecal fistula. One duty of the surgeon is to be on guard for general and local signs of abscess formation. Unless an abscess develops the prognosis is good so far as subsidence of the acute attack is concerned.

Gordon Watson has said. In these acute cases colostomy will often be necessary and again. In the absence of a definite abscess active inflammation subsides with surprising rapidity after colostomy.

Chronic diverticulitis without complications is not a surgical disease but if operation is performed for suspected neoplasm the affected coil should be lifted out of the pelvis and wrapped with omentum in order to prevent the occurrence of a perforation of the bladder if an abscess forms later.

Acute perforation is not likely to be diagnosed accurately before operation. It should therefore be borne in mind when the abdomen is opened on account of acute peritonitis of uncertain origin. The perforated diverticulum should be excised the bowel wall invaginated and drainage established as may be necessary. The infection is apt to be of a severe type.

In subacute and chronic perforation it is best to wait until the abscess is well defined and to confine surgical treatment strictly to evacuation of the abscess and drainage of its site. To obtain healing it is unnecessary to search for a sloughed or perforated diverticulum.

The treatment of stenosis which is known definitely to be secondary to diverticulitis depends upon the requirements of the particular case. In this condition there is no such clear indication for operation as in cancer in which it is known with certainty that the stenosis will be progressive.

Lockhart Mummery says. Early recognition of the disease is of the utmost importance but if symptoms of chronic obstruction associated with the formation of a tumor and chronic sepsis are already present I believe that immediate surgical interference is indicated and that palliative measures at this stage will more than probably result in a disaster from which it will be difficult if not impossible for the surgeon to extricate the patient. As in so many other diseases one sees that the bad results following operation are almost invariably in those cases which have been submitted to operation at a too advanced stage.

The first question to answer in any given case of diverticulitis is whether operation is necessary or not. If the patient is suffering in spite of treatment from a recurring attack of subacute obstruction with griping pain distention and constipation operation is undoubtedly indicated.

If the disease is so situated and so localized that resection is easy resection is the operation of choice but when anastomosis would be impossible it is unjustifiable to subject the patient to an extensive operation involving risks inasmuch as in colostomy we have a remedy for the disease which offers a fair prospect of cure. In stenosis of the pelvic colon colostomy in the transverse colon seems to be the best procedure when resection is impossible. On account of the usual site of the disease a short circuiting operation will rarely be feasible but under favorable conditions is preferable to colostomy.

In 3 cases reviewed by the author—1 of which was treated by resection 1 by colostomy and 1 by diversion—the indication for operation was clear. A borderline case in which the necessity for operation was debatable was that of a man sixty one years of age who was not a good surgical risk and had been operated upon two years previously for a supposed neoplasm causing constipation recurring griping pain and distention. The sequel is interesting as showing that the stenosis is not necessarily progressive. To day although nothing was done the attacks are less severe and recent roentgenological examination shows the stenosis to be definitely less marked than two years ago. The diverticulitis and constriction involve the distal part of the pelvic colon but diverticula are present throughout the sigmoid loop and in the lower part of the descending colon. As the symptoms at present show no tendency to increase in severity the author advises against surgical treat-



ment but he is of the opinion that if operation should become necessary colostomy would be the procedure of choice

In chronic diverticulitis with stenosis resection will be employed more and more frequently and except in a very few cases will always be extensive. Resection must go wide not only of the area of diverticulitis but also of any associated diverticulosis. The portion of bowel chosen for the anastomosis must be free from developed diverticula. This must be proved roentgenologically as the presence of diverticula in a fat laden bowel is liable to be overlooked at laparotomy. Before the indication for resection can be settled the value of colostomy in these cases of stenosis must be estimated. It is possible that if the bowel were kept empty by colostomy the inflammatory condition might subside and the stenosis resolve. In cases of stenosis which are obviously unfavorable for resection colostomy is the method to be recommended as it offers a fair prospect of cure.

JOHN J. MALO, M.D.

Gardham A. J., Choyce G. C. and Randall M.  
*Diverticulosis of the Appendix and Pseudomyxoma Peritonei* *Brit J Surg* 1923 xvi 63

GARDHAM states that diverticulosis of the appendix seems to be related to pseudomyxoma of the peritoneum which is a more rare condition. In cases of pseudomyxoma originating in the appendix diverticula have been found when the appendix has been fully investigated. Neumann found diverticula in four of eight cases of pseudomyxoma. It therefore appears that pseudomyxoma frequently follows diverticulosis. Because of the repeated mild attacks the conclusion is drawn that the diverticula are formed as a result of the destruction of small areas of the muscular layer by interstitial abscesses during an attack of appendicitis. In this process the mucous membrane is not destroyed. With destruction of the mucous membrane perforation takes place.

Repeated attacks lead either to perforation of the diverticulum or its operative removal. In a minority of cases the inflammation subsides sufficiently to allow perforation of the diverticulum without abscess formation. These are the cases which develop pseudomyxoma. The finding of an omental mass in many of the early cases and the fact that pseudomyxomatous nodules in the omentum are regarded as a characteristic early sign indicate that the omentum is closely connected with the production of pseudomyxoma peritonei. In a case reported by Gardham a portion of the mucosa was supplied by vessels from the omentum suggesting that in event of rupture of the diverticulum part of the membrane may retain its connection with the omentum. Continued production of mucus after removal of the appendix has been observed. The absence of an epithelial lining in the diverticulum in cases of pseudomyxoma peritonei indicates that the diverticulum does not play an active part in the later stages.

CHOYCE states that pseudomyxoma peritonei in association with perforated ovarian cysts was noted by Werth in 1884 but the first case in which the condition was associated with a perforated cystic appendix was reported by Fraenkel in 1901. In 1910 Trotter reviewing nine cases in the literature and one of his own found three varieties of appendicular abnormality: (1) simple obstruction resulting from fibrosis (or in one case from carcinoma of the appendix); (2) diverticula of mucous membranes through the appendicular wall and subsequent rupture; and (3) multiple cystic degeneration of the wall of the appendix.

Some cases have been found to be associated with both ovarian cysts and cystic appendix and in one case there was a mucoid collection in an umbilical cyst.

Removal of the source and of as much of the pseudomyxomatous material as possible does not necessarily effect a cure. The jelly like material either reproduces itself or is produced by cells from the appendix or ovary implanted in the peritoneum. Trotter found chains of cubical cells but no definite identification of such cells has been made. If these implanted cells are responsible for continued production it would appear that they eventually die out as several patients are alive and well after repeated operations.

Both the ovary and appendix should be removed if they do not appear normal and as much gelatinous material should be removed as is possible without causing too much damage to the peritoneum. Drainage is contra indicated as in many of the early cases in which it was established the patient died.

RANDALL reports the case of a man seventy-one years of age who was admitted to the hospital complaining of general weakness and great abdominal enlargement and distress. Three years previously he had an attack of abdominal pain with subsequent gradual enlargement of the abdomen. Examination showed the abdomen to be uniformly enlarged the skin not shiny and the tension not great. The enlargement was sufficient to cause a direct forward projection of about 3 in. from the costal margin. There was no resonance. Throughout the abdomen a sluggish fluid thrill was noted. Exploratory puncture below the umbilicus withdrew only a small amount of thick gelatinous fluid. Trotter who was asked to see the case made a diagnosis of myxomatous cyst originating from the appendix.

At operation a huge cavity filled with thick stringy mucoid material was found. Twenty quarts of this material were removed. Five days after the operation the patient died. Autopsy revealed the presence of a huge thick walled cyst which extended to every recess of the abdomen and was adherent to the surrounding structures. Pathological examination showed the origin of the cyst to be the appendix which passed through the cyst wall 1 in. from the tip. The tip was free in the cavity and was perforated. The contents of the cyst were assumed to

be the secretions of the appendix during the years since the first symptoms E S PLATT M D

Eliason E L and Ferguson L A Mortality Factors in Acute Appendicitis *Ann Surg* 1928 lxxviii 65

Between 1886 and 1915 many articles on acute appendicitis appeared in the literature but since 1915 there have been relatively few and the mortality of the condition has increased. One cause of the increase in the mortality may be the fact that appendectomy is no longer considered a major procedure and is undertaken by inexperienced operators. Another probable cause is the fact that in the past many of the end results of neglected appendicitis were charged not to the appendicitis but to perinephric abscess liver abscess septic pneumonia etc. because before 1915 it was not known that these conditions might be of appendiceal origin. Statistics show that the deaths occur in cases of delayed diagnosis when the disease is no longer confined to the appendix.

The authors review a series of 675 cases in which the diagnosis was proved by laboratory tests and gross specimens. Operation was performed as soon as the diagnosis was made provided rigidity or shadowed distention and the vascular system was still competent. A low blood pressure associated with a high temperature and coldness of the extremities was regarded as a contra indication to surgery.

The typical case shows that the symptoms have a definite sequence. Pain of a colicky or cramp like nature with more or less general distribution begins rather suddenly and continues and increases in intermittent waves. In the beginning there is no rigidity or tenderness. The pain reaches its maximum usually in the first four hours and is referred to the epigastrium or the region of the umbilicus. Nausea and vomiting follow the primary pain within an hour or two and continue for a short time only. From four to eight hours after the onset of the disease the pain is more or less constant with exacerbations and becomes localized at McBurney's point. Tenderness and muscular rigidity are found in this region and the vomiting has ceased. From two to six hours after the beginning of the pain the temperature rises usually to from 100 to 101 degrees F. the pulse rate is somewhat increased, there is an increase in the polymorphonuclear leucocytes and there is a tendency toward constipation and restlessness.

In the cases reviewed drainage was necessary most often in the treatment of the youngest and the oldest patients. In the cases of those under five years of age it was necessary in 94.1 per cent. and in the cases of those over fifty five years of age it was necessary in 100 per cent and the mortality was increased to 27.8 per cent.

Delayed or erroneous diagnoses are often due to the fact that too much importance is attributed to pain tenderness and rigidity at McBurney's point. Livingston found typical pain and rigidity in only 75 per cent of his cases and local rigidity in only 59

per cent. Gladstone and Wakely found the appendix in the pelvis in 27.5 per cent of 3,000 cases and behind the caecum in 69.2 per cent. Inflammation of a pelvic appendix usually causes epigastric pain and rectal tenderness with tenderness over and rigidity of the extreme lower end of the right rectus abdominis muscle. Pressure over this area frequently causes pain in the epigastrium. Appendiceal or secondary pain and tenderness are present at the site occupied by the appendix. Inflammation of a retrocaecal appendix therefore causes loin pain and tenderness and inflammation of a pelvic appendix causes rectal pain and low rectus rigidity and tenderness. Vomiting is not a dependable sign. It is especially unreliable in children and older persons. In the aged none of the objective signs indicates the gravity of the condition. The high temperatures occur in the retroperitoneal cases and those in which the condition develops during or immediately after a pharyngeal or respiratory infection. A leucocytosis of 8,000 or more is absent in 20 per cent of the cases. Cases with a low leucocytosis and a high temperature always progress unfavorably.

A cathartic given at the onset of the disease will probably do little harm if the diagnosis is made early and appendectomy is performed within from twelve to fourteen hours. Cathartics administered early or late with delay of operation are probably responsible for some of the complications and deaths. In certain types of cases perforation occurs very rapidly. In acute appendicitis concurrent with acute tonsillitis the appendix condition progresses rapidly and perforation may occur in from ten to twelve hours. Another type in which perforation occurs early is that in which the ulceration is near the base of the appendix.

When the diagnosis of acute appendicitis is made operation should be performed at the earliest possible moment unless the patient has a low blood pressure, a high temperature with coldness of the extremities and distention predominating over rigidity associated with diminished pain and a silent abdomen. The most frequent complications of appendicitis are peritonitis and intestinal obstruction.

MERLE R HOON M D

Hurst A F Turner T W and Venables J F The Early Diagnosis of Cancer of the Colon and Rectum *Lancet* 1928 cxxix 12 5

The early diagnosis of carcinoma of the colon depends primarily upon the ability of the practitioner to obtain an accurate history and to recognize suspicious symptoms. By the time the first symptoms appear the growth is apt to have reached a size sufficient for diagnosis by the X ray and sigmoidoscopy.

The average duration of symptoms in twenty five cases observed by the authors was ten months.

The earliest symptoms are abdominal discomfort or pain and a change in the habitual action of the bowels. These two symptoms were present in all of the reported cases. The discomfort or pain is

localized in the segment of bowel proximal to the obstruction. It is a small intestine pain. In cancer of the caecum it is felt in the neighborhood of the umbilicus in cancer of the ascending colon or hepatic flexure on the right side of the abdomen and in cancer of the splenic flexure descending and iliac colon and the proximal part of the pelvic colon on the left side. Pain produced by a growth in the middle segment of the transverse colon is felt just below the umbilicus and that caused by a growth in the distal part of the pelvic colon or pelvic rectal flexure is localized in the middle line between the umbilicus and the pubes.

The pain due to cancer of the colon is often colicky and its cessation may coincide with the gurgle which can be heard and felt. The latter is a most significant sign which may enable the patient to localize the site of obstruction with great accuracy.

Some patients with cancer of the colon complain of diarrhea, others of constipation and still others of both conditions. In contrast to carcinoma of the stomach cancer of the large bowel rarely causes general symptoms in its early stages. There is at first no anæmia and no loss of weight. The patient may feel quite fit, his appetite remaining good and his energy undiminished.

A barium enema often will show a growth which the opaque meal fails to reveal. A slight obstruction may lead to only temporary delay in the passage of the enema fluid due to spasm. Sometimes a small tumor may be palpated if the fingers are thus directed to the exact point of localization. Early cases of carcinoma of the colon may show no filling defect and no obstruction to the passage of an opaque meal or opaque enema.

The presence of mucus in a solid stool is of no significance but the presence of blood or pus with or without mucus is always an indication for further investigation. If the stool is fluid or semi fluid ulcerative colitis is probably present but if in addition fragments of solid faeces are found the condition responsible is more probably a growth of the pelvic colon or rectum. However visible blood and pus are hardly ever observed when the growth is proximal to the pelvic colon. If the stool is apparently negative the patient should begin on a meat and chlorophyll free diet and charcoal and after all of the charcoal has been passed the stools should be examined chemically for occult blood. According to the authors experience occult blood is present in all or almost all specimens in every case of cancer of the stomach and cancer of the colon. Occult blood is rarely found in uncomplicated diverticuli and never in constipation or diarrhea unaccompanied by organic disease. Curiously a local band of adhesions involving the colon may also lead to the constant presence of occult blood in the stools. The differentiation may be impossible but frequently can be made on the basis of a carefully taken history.

The authors deplore the fact that the sigmoidoscope is not used more generally by other members of the medical profession besides the proctologists.

In conclusion they state that if all cases of suspected carcinoma of the colon were sent for diagnosis within a month of the onset of symptoms many patients would doubtless be advised to undergo an operation when the evidence was still inconclusive but that an occasional unnecessary exploration would be more than compensated for by the infinitely better prospects of permanent cure presented if the average duration of symptoms when the patient is sent to the surgeon were one month instead of ten months. HARRY C. SALTZSTEIN, M.D.

Wheeler Sir W. I. deC. Dukes C. Hodgson H. A. G. Hurst A. F. and Others Discussion on the Early Diagnosis of Carcinoma of the Rectum and Colon. *Brit. Roy. Soc. Med. Lect.* 1928 xxi 1543.

WHEELER states that it is common for the surgeon to see the patient with carcinoma of the rectum or colon first when symptoms of acute intestinal obstruction, anæmia and the passage of blood mucus and pus indicate terminal and wide pathological changes and that 70 per cent of the cases entering hospitals for the first time are inoperable.

Cancer of the rectum, rectosigmoid and distal portions of the colon should be recognized early with the modern means at our disposal. If operation is performed early a five year cure is obtained in 50 per cent of the cases of rectal cancer and in over 60 per cent of those of cancer of the caecum. With modern technique the operative mortality has become negligible and the end results have been greatly improved. Early cancer of the colon is easily extirpated. According to Rutlin 55 per cent of the growths remain localized until death.

A rectal examination should be made in every case of abdominal disturbance as the early history of a colonic growth may seem to point to cholecystitis or displacement of the uterus and the stimulation of peristalsis caused by a tumor in the colon may produce the symptoms of dyspepsia.

There is evidence that many carcinomata of the colon originate in papillomata which may be revealed by the sigmoidoscope. If a growth is found in one portion of the colonic tube others may be present higher up and this possibility should be borne in mind by the surgeon at the time of operation.

The X ray examination though important is not infallible and must not be interpreted as settling once and for all the presence or absence of a colonic growth. The most important X ray sign of cancer of the colon is a filling defect next in importance is obstruction. If the affected bowel lies with its axis in the direction of the X ray the defect will not be seen in the barium shadow.

All rectal examinations should be made humanely. Ninety per cent of the growths in the rectum, rectosigmoid or lower sigmoid can be palpated by this method. The disappearance after an enema of a mass felt in one of these regions should excite rather than dispel suspicion as such a mass may be

formed by the collection of feces above a stricture. Suspicion should be aroused also when the symptoms of appendicitis are noted on the left side. Surgical exploration should be undertaken only when suggestive symptoms persist and all other means of diagnosis have been exhausted. Fischer gives the following advice:

1 When the X-ray picture is negative the test for occult blood is repeatedly positive, no tumor is palpable and the history is suspicious, wait and repeat the X-ray examination after from four to six weeks.

When the X-ray picture is not definitely negative after repeated examinations, no tumor can be palpated, the test for occult blood is positive and the history is suspicious, perform an exploratory laparotomy.

3 When the X-ray picture is suspicious, no tumor is palpable, the test for occult blood is negative and the history is suspicious, repeat the X-ray examination in four weeks and if it is then still suspicious, perform an exploratory laparotomy.

In the young, cancer of the stomach and rectum is more frequent than cancer of the colon. A hyperplastic tuberculous infiltration probably simulates cancer of the colon more closely than any other condition.

Palpation of growths in the hepatic and splenic flexures may be facilitated by palpating with the patient in the erect position. The patient should stand supporting his hands on the bed or a table and the examiner should stand back of him.

Blood, mucus and pus are very valuable but late signs in cancer of the bowel. Most reliable is the benzidine test which requires 200 red cells per centimeter. If the bleeding is from the caecum or ascending colon, an advanced anemia may simulate pernicious anemia without the appearance of gross blood in the stool. A hemoglobin value as low as from 20 to 30 per cent does not contraindicate operation for cancer in this region as it does in the stomach. Visible and palpable peristalsis is an early sign of obstruction.

Any change in the character or type of the stool should be looked upon with suspicion. The lower bowel contents the presence of a foreign body and reacts to it by a teasing tenesmus.

Wheeler draws the following conclusions:

1 In the presence of a growth, painful peristalsis of the colon or pyloric spasm immediately after the ingestion of food may lead to the faulty diagnosis of a lesion in the upper abdomen.

2 Cancers of the lower colon and rectum are external cancers from the diagnostic point of view.

3 Digital and sigmoidoscopic examinations are made too infrequently.

4 Cancers of the hepatic and splenic flexures are best palpated with the patient in the erect stooping position.

5 Persons with cancer develop a certain degree of immunity but the possibility of more than one independent growth should be considered.

6 Palpable peristalsis is a reliable sign of obstruction in the colon. Teasing tenesmus is a constant symptom of rectal growths.

Dukes in discussing the pathological phase of early diagnosis emphasizes that patients with adenomatous tumors which can be seen on sigmoidoscopy should be examined with the sigmoidoscope frequently as such tumors are often scattered for several inches over the bowel above and below the malignant growth.

With regard to the microscopic examination he states that the tissue at the edge of the tumor or ulcer is most apt to reveal the malignant cells.

Hodgson points out that the smaller the lesion the more difficult its roentgenographic detection. This is true especially if the growth is in a wider portion of the colon such as the caecum and when the bowel is covered by the shadow of overlying loops as in the hepatic and splenic flexures. In these situations oblique views are essential.

Another method for the detection of early malignant or inflammatory invasions of the bowel wall is the dual exposure. In this procedure two roentgenographic exposures are made at intervals of two or three seconds on the same film, the patient ceasing respiration until both exposures have been made and the bowel being distended with warm fluid so that peristaltic action is more frequent than normal. Two peristaltic waves can be seen except where the bowel wall is diseased. In the diseased area there will be no peristaltic wave and consequently no double shadow. This is the earliest demonstrable X-ray sign of malignancy and can be seen in cases in which the growth is of insufficient size to produce a filling defect.

Hurst states that the two earliest symptoms are abdominal discomfort or pain and a change in the habitual action of the bowels. The pain is located in the bowel proximal to the obstruction. If the cancer is in the caecum the pain is in the small intestine whereas if the cancer is in the ascending colon or hepatic flexure the pain is in the right half of the abdomen. Cancer in the transverse colon, splenic flexure or descending or pelvic colon causes pain on the left side. The obstruction may produce a colicky pain and its disappearance may coincide with a gurgle which can be heard and felt.

Lockhart Mummery states that the present day earlier diagnosis of cancer of the rectum and colon is due to the more frequent use of the sigmoidoscope and routine examination for occult blood in the stools.

Gabriel calls attention to the value of routine yearly physical examinations in the discovery of unsuspected colonic and rectal cancer.

Norbury states that in his opinion a sigmoidoscopic examination should be made in routine examinations even if it is only slightly indicated.

Gouldesbrough reports that for fluoroscopic examination of the sigmoid following the injection of a barium enema he uses a tilting table.

PAUL W. SWEET, M.D.

# LIVER GALL BLADDER PANCREAS AND SPLEEN

Pribram B O Mucoclasia and Surgery of the Biliary Tract without Drainage (Mukoklasie und drainage Gallenchirurgie) *Zentralbl f Chir* 1928 iv 773

Pribram believes that the great majority of surgeons favor drainage of the abdominal cavity in surgery of the biliary tract. Although there are certain cases in which smooth peritonization is possible and the abdomen may therefore be closed they nevertheless regard it as always safer to insert a drainage tube. The statistics on the causes of death following operations on the biliary tract show that in spite of drainage the most common cause of death is peritonitis.

The author believes that the direct harm caused by drainage in operations on the biliary tract is generally underestimated and that many of the fatalities should be attributed not to the disease but to the use of drainage and tamponade. The fear of complete closure of the wound insofar as it is based upon opening of the stump of the cystic duct which has been carefully covered with folds of the serosa of the hepatoduodenal ligament secondary hemorrhage and the escape of biliary fluid from the liver bed is not justified. There is danger of the escape of bile only when the liver bed has been injured. Accordingly when closure of the abdomen is to be done injury of the liver bed must be absolutely avoided. This is possible with certainty only by careful subserous enucleation of the gall bladder and then only in some of the uncomplicated cases without severe changes in the wall of the gall bladder.

To avoid injury of the liver bed under all circumstances the author has adopted the following technique.

By means of a suction pump the gall bladder is completely emptied of its fluid contents. It is then split in the center from the fundus to the cystic duct and the stones are removed. The exposed cystic duct is divided between two ligatures. The mucosa is then completely charred with the cautery down to the serosa and the wall abscesses penetrating into the liver are destroyed in the same way. By this procedure two folds are obtained. These are invaginated into the bed of the liver and accurately sutured together with seroserosal invagination sutures. A sufficient amount of tissue still remains to cover a suture of the common bile duct and the hepatic duct.

The author calls this procedure mucoclasia. It has given him excellent results and is to be recommended especially for complete closure of the wound in complicated cases. Even in cases in which the common bile duct is full of stones or in which concretions are lodged in the papilla and the bile is cloudy and infected Pribram omits external drainage and has obtained good results by draining the bile into the duodenum. If the papilla is not abso-

lutely free he performs a duodenocholedochotomy as simple dilatation of the papilla does not persist permanently. He always operates without luxating the liver chiefly because traction on the diaphragm seems to favor poor ventilation, hypostasis and the development of pneumonia in the lower lobe of the right lung. Moreover he advocates sharp dissection with the scissors rather than dull dissection.

In 200 operations including all types of gall bladder surgery performed on patients ranging in age from seventeen to seventy years there were no deaths from the immediate effects of the operation and in no instance did peritonitis develop. Three of the patients died several weeks after the operation.

One was a pregnant woman forty-one years of age who succumbed three weeks after the operation from acute yellow atrophy of the liver but with absolutely negative findings in the peritoneal cavity and biliary tract. Another was a thirty-seven year old woman who died ten weeks after the operation from a solitary liver abscess the size of a child's fist which surrounded an intrahepatic calculus and was not discovered at a second laparotomy performed two months after the first operation on account of continuous fever. The third was a man fifty-seven years of age who died ten weeks after the operation from suppurative parotitis.

In general the convalescence following mucoclasia was smooth and satisfactory in spite of the fact that all of the cases were severe and complicated and the patients had a high fever at the time of the operation. Adhesions are formed even after complete closure of the wound but the author does not believe that they are responsible for the greater percentage of the recurrences, pseudorecurrences and other recurrent symptoms. The chief causes of recurrences are calculi left behind particularly intrahepatic concretions that are newly formed in the congested biliary passages, cholangitis, cicatricial stenoses at the papilla and possibly in a small percentage of cases purely spastic conditions.

ROSE (2)

Sherwood W A Surgical Lesions of the Biliary Tract *Ann St* 1928 lxxviii 175

This report is based on a study of 200 consecutive cases of surgical lesions of the biliary tract about 65 per cent of which had been previously observed in the out patient department of the Brooklyn Hospital. The lesions were primarily mechanical and circulatory disturbances rather than of infectious origin.

The most successful results were obtained in cases showing obstruction of the flow of bile. In the majority this was due to stones, gravel or inspissated bile. The effects of obstruction by stones vary with the size, number and location of the stones. Stones may be found in (1) the intrahepatic ducts, (2) the extrahepatic ducts, (3) the gastro intestinal tract, (4) the peritoneal cavity or (5) the gall bladder.

Stones in the intrahepatic ducts are usually small and commonly described as gravel. They cause only partial obstruction of the duct radicles and the ensuing liver damage is confined to a small area. Larger stones located in the larger ducts cause intense engorgement of the entire liver and extensive necrosis from back pressure. In some cases there may be an ascending cholangitis.

Stones in the extrahepatic ducts constitute the most serious result of gall stone formation. The gravity of the condition depends largely upon the completeness of the occlusion. Sudden complete obstruction results in obstructive jaundice and necessitates prompt surgical intervention. There is frequently an ascending cholangitis.

If a stone is impacted in the ampulla of Vater and if the ampulla receives both the bile and pancreatic ducts either the retrojection of bile into the pancreas or the escape of pancreatic enzymes may result in hemorrhagic necrosis of the pancreas. Hemorrhagic pancreatitis is a frequent complication of biliary obstruction and inflammatory disturbance.

Stones in the gastro intestinal canal were found in 4 cases of partial or complete intestinal obstruction observed in the Brooklyn Hospital in the past few years. The location of the fistula was variable but the large size of the stones indicated that they had their origin in the gall bladder.

Stones in the peritoneal cavity were found in 3 of the cases reviewed. In 2 the rupture had apparently occurred spontaneously with little or no evidence of pathological changes in the gall bladder and the ensuing peritonitis was only a transitory chemical reaction to the irritation of the bile. In 1 case the gall bladder was gangrenous.

Stones in the gall bladder may or may not be accompanied by symptoms or appreciable pathological changes in that organ or other parts of the biliary tract but they are always a potential source of danger. Cultures from freshly removed gall bladders containing stones are frequently negative and stained sections of walls of the gall bladder often show none of the characteristic changes associated with infection. When pathological changes are easily recognized they appear to be the result of mechanical and circulatory disturbances due to the presence of a foreign body which as a rule is impacted in the cystic duct. A secondary infection often develops as a result of the presence of stones but the author disagrees with those who maintain that gall stones do not develop in the absence of an infected medium and that they are invariably the result of bacterial invasion. He believes that the primary factor in the etiology of cholelithiasis is a disturbance of body chemistry in relation particularly to cholesterol and calcium metabolism. This view is supported by the recent investigations of others.

Gradual occlusion of the cystic duct by a stone appears usually to result in mucous hydrops of the gall bladder. Sudden occlusion causes marked edema and hemorrhage into the cavity or between

the layers of the wall. Repetition of this process causes fibrosis of the wall. First there is interference with the venous circulation and later when the condition becomes more severe the arterial supply is impaired and partial or complete infarction or gangrene occurs depending upon the degree of the occlusion or thrombosis.

When the gall bladder shows obvious pathological changes in the absence of stones it is assumed that the cause of the changes was the previous presence and passage of calculi.

In the author's opinion the acute gall bladder condition is not similar to acute appendicitis as the constitutional symptoms, temperature, blood picture, pathogenesis and bacteriology are in no way analogous. In acute conditions of the gall bladder even when perforation has occurred with the formation of an intraperitoneal abscess spreading peritonitis rarely develops and the organisms found are of a different strain and type than those present in suppurative lesions of the appendix. Empyema of the gall bladder has often shown negative cultures and smears.

The author's chronic cases in which no stones were found showed fibrosis and involution atrophy of the gall bladder wall which were believed to be the result of prolonged venous stasis of mechanical origin. Pathological examination in these cases failed to demonstrate the presence of infection.

Only the acute cases reviewed were treated as surgical emergencies. The others received conservative treatment, this policy having been adopted at the outset for the following reasons:

1. Because it is safer to permit the average acute gall bladder condition to subside before operation is undertaken.

2. In suspected biliary tract disease sufficient time should be allowed for diagnostic studies and the determination of the factor of safety.

It is believed that by utilizing the various diagnostic procedures available it is possible in most instances to make an accurate estimation of the underlying pathological changes to convert a poor operative risk into a comparatively safe one and to carry out the indicated procedure at the best time for the patient.

In this analysis several facts are emphasized. Stone formation was found in 120 (65 per cent of the cases operated upon). Of 108 X ray studies stones were seen in only 24 (22 per cent). Malignant disease was found in 8 (4 per cent) of the total number. Obstruction of the common duct with jaundice was observed in 10 cases (5 per cent of the total number). There was no instance of accidental injury to the ducts. Cholecystectomy was the operation of election but cholecystostomy or a simple drainage operation was done in all of the acute cases as an emergency measure. The author advocates more frequent use of this simpler procedure in the cases of patients who are poor risks.

\* Most complete and permanent relief was obtained by patients with cholelithiasis who sought treatment

for repeated pain and colic. These symptoms were associated mainly with the impaction of a stone in the cystic duct or more rarely in the common duct. The condition was not primarily infectious in origin but was due chiefly to mechanical or circulatory disturbances with edema, hemorrhage, hydrops or infarction. Infection when found was thought to be secondary.

The results were least satisfactory in cases without cholelithiasis which presented the vague symptoms that are often ascribed to infection of the gall bladder rather than the severe pain and colic of cholelithiasis. In cases with only slight fibrosis or involution atrophy with vague symptoms non-surgical measures should be used in preference to the more dangerous surgical removal of the gall bladder.

I. S. LEATT, M.D.

Chlray and Pavel. How the Gall Bladder Fills and Empties Itself (Comment la vésicule biliaire se remplit et comment elle se vide). *Presse méd.* Jan. 1925 xxx: 1289.

The classical studies of Oddi confirmed by Demel and Brummelkamp demonstrated that the gall bladder fills possibly as the result of an increase of pressure in the ducts produced by closure of the sphincter of Oddi but more recently Whitaker found that the gall bladder remains empty after section of the sphincter. Mann found that after ligation of the cystic duct, Bengal red injected intravenously appears in the gall bladder. Accordingly, direct excretion seems to be a factor in the filling of the gall bladder. Possibly the biliary canaliculi and the hepaticocystic lymphatics have an active part.

Until recently investigations with regard to the emptying of the gall bladder dealt merely with the musculature. From the first studies of Doyon to those of the present time the contractility of the gall bladder has been amply proved. Moreover it has been found recently that certain foods and drugs stimulate evacuation of the gall bladder. Boyden was the first to show the specific effect of white of egg and cream and attributed the discharge of bile to a sympathetic reflex. Among the drugs having such an effect are magnesium sulphate, peptone, hydrochloric acid, oleic acid, oil of peppermint, concentrated glucose solution and pituitrin.

The most active controversy in recent years has centered about the relation of gall bladder function and the function of the sphincter of Oddi. Clisson was the first to suspect the presence of a sphincter at the ampulla. In 1897 Oddi described the sphincter as an organ anatomically and functionally independent of the wall of the duodenum. In the opinion of some investigators the sphincter is not physiologically distinct from the duodenum and it is the relaxation of the duodenal wall which produces the periodical evacuation of bile from the ampulla.

The authors believe that the sphincter of Oddi is a distinct entity and accept Doyon's original theory of the synergistic innervation of the gall bladder and sphincter.

They state that the law of contrary innervation should be considered not from the anatomical but from the physiological standpoint. While contraction of the gall bladder should raise opening of the sphincter, the opening does not necessarily lead to contraction of the gall bladder. Thus in the Lyon Veltzer test the presence of a sound provokes the flow of Bile A but not of Bile B. To obtain Bile B it is necessary to inject a specific substance which will cause contraction of the gall bladder. Another example is found in the chologogues acting on the liver cell. The flow of bile is increased into the duodenum but no effect is produced on the gall bladder.

Sulphate of magnesium without question relaxes the sphincter, but its effect on the gall bladder is often negligible, a fact suggesting that the Lyon test is not a rational procedure. This is suggested also by pharmacodynamic studies which show that while the sphincter of Oddi controls the flow of bile into the duodenum it plays no part in the contraction of the gall bladder.

ALBERT F. DE GROOT, M.D.

Scott, W. J. M. and Whitaker, L. R. Expulsion of Its Contents as a Function of the Gall Bladder: A Clinical Application. *J. Am. M. Ass.* 1925 xxi: 9.

The fact that partial emptying of the gall bladder occurs after the ingestion of fat is well known. Hypotheses explaining this fact fall into two groups according to whether it is assumed that the gall bladder plays a passive or an active rôle. The chief mechanical factors suggested are: (1) variations in intra-abdominal pressure; (2) intestinal peristalsis; (3) an elastic recoil following relaxation of the common duct sphincter; and (4) washing out of the gall bladder by hepatic bile.

The assumption that variations in intra-abdominal pressure and intestinal peristalsis play a part is disproved by the fact that the gall bladder remains full after fasting after the violent struggling of experimental animals subjected to tube feeding, and also after vigorous peristalsis from physostigmine or a bromine or starch meal when it contains iodized oil. The theory of an obligatory reciprocal mechanism is refuted by the fact that the gall bladder empties after a fat meal with a rubber tube occluding the common duct sphincter or with a cannula in the cut end of the cystic or common duct. With regard to the fourth factor suggested, the authors state that concentration of bile in the gall bladder after the ingestion of fat must occur during the emptying phase and is difficult to reconcile with emptying by washing out with hepatic bile which must produce dilution instead.

Graham has reported that emptying does not occur after occlusion of the hepatic ducts but the authors experience is to the contrary. In two cats the authors ligated all the hepatic ducts as proved later by necropsy and filled the gall bladder with iodized oil. In both partial emptying followed the

ingestion of fat and in one as shown by X ray examination and necropsy, 90 per cent of the contents was evacuated.

The authors conclude that emptying of the gall bladder in response to fat is an active function of the gall bladder musculature independent of mechanical factors. As a corollary they remind us that this is a smooth muscle response and that therefore general conditions influencing smooth muscle tonus must be considered in the interpretation of the motor phase of any cholecystographic series.

BURTON CLARK JR MD

Blond K. A New Working Hypothesis for Clarification of the Gall Bladder Problem (Eine neue Arbeitshypothese zur Klärung der Gallenprobleme) *Arch f klin Chir* 1928 cxviii 662

According to Blond the theory that the gall bladder empties itself by active movement is refuted by the anatomical structure of the valve of Heister by probing irrigation suction pressure and dye experiments and by the embryological development and vascular supply of the organ and is seemingly supported only by the findings of duodenal sounding and cholecystography.

Bile secretion is a function of the liver cells and shows marked qualitative and quantitative fluctuations. The gall bladder is the reservoir for the storage of the constituents of the bile which are so necessary for the bodily economy. In response to the stimulation of the food which reaches the duodenum the liver obtains the various constituents necessary for the formation of bile from the cystic veins and the portal vein (intermediary bile circulation).

Function of the sphincter of Oddi in the prevention of the flow of bile from the common duct during the intervals between digestion is unnecessary since when at rest the duodenum has an internal pressure greater than the secretion pressure of the liver cells.

The quantity as well as the composition of the bile entering the duodenum is also dependent upon the liver cells not upon the gall bladder. The healthy mucous membrane of the gall bladder absorbs the various constituents of the normal bile and turns them back to the liver. The physiological course of this absorption, the flow of venous blood from the gall bladder to the liver and the reflexes which come from the duodenal mucosa are controlled by the nerves of the gall bladder.

The stomach duodenum gall bladder and pancreas constitute a functional unit and must be considered a unit also from the standpoint of therapeutics. The colic of duodenal ulcer of the same character as gall stone colic and the latter may be associated with duodenal cramps. The site of the cramps establishes the clinical picture. Cholecystitis cholelithiasis and pancreatitis begin with a functional stenosis in the duodenum. In 80 per cent of the cases of cholecystitis and cholelithiasis pancreatitis is also present. Cholecystitis cholelithiasis contracted gall bladder and hydrops are the results of infection of the gall bladder which hinders phys-

iological absorption. Injuries of the bile passages and pancreas induced by gastro enterostomy and resection of the stomach also play an important rôle since they interfere with the normal duodenal flow.

In Blond's opinion the operative removal of the gall bladder is indicated only when all other methods have failed and the resorption power of the gall bladder mucosa has been practically destroyed.

BODE (Z)

Deaver J B. The Chronic Gall Bladder. *Canadian M Ass J* 1928 cxviii 666

One of the important functions of the gall bladder is the excretion of concentrated bile through the common duct into the small bowel. It is interference with this function that marks the beginning of so called gall bladder dyspepsia with its immediate and remote sequelæ. Bile stasis may form the nucleus of a stone and stone is the cause of a large percentage of gall bladder troubles. In most cases the cause of interference with the excretory function is infection. The infected gall bladder may become the focus of infection for systemic and cardiovascular disease. When once infected the gall bladder is always infected.

It is a well established fact that next to chronic appendicitis chronic disease of the gall bladder is the most common cause of epigastric discomfort. Gall bladder dyspepsia is Moynihan's significant term for the syndrome of flatulence fullness after meals and more or less marked epigastric discomfort which may amount to pain that usually radiates around to the back and up between the shoulder blades. This typical pain is not always present in the early cases. The stomach soon shows selective action in its intolerance of greasy heavy and acid foods and its acceptance of a soft bland diet. One of the difficulties in diagnosis is the proper evaluation of the early symptoms. This difficulty is overcome to some extent by cholecystography by the Graham method. The question arises as to what degree of functional derangement shown by the cholecystogram warrants operative interference. Moynihan goes so far as to advocate the excision of every gall bladder if in the presence of what he calls inaugural symptoms the cholecystographic shadow is absent its opacity is diminished or its appearance is delayed. The non-calculous gall bladder presents difficulties that are not always solved by the cholecystogram.

The indications for operation are a history of attacks at first occurring at long intervals but later becoming more frequent and more severe and the presence of tenderness at the site of the lesion. If at operation the gall bladder is found to be the cause of trouble cholecystectomy is the procedure of choice.

In Deaver's opinion cholecystectomy is preferable to cholecystostomy whenever it is possible. A patient treated by cholecystostomy remains subject to the same risk of cholelithiasis with the formation of stones and excursions of the latter into the deeper ducts invasion of the liver pancreas etc as before the drainage operation.



Recurrence of symptoms after gall bladder operations may be due to the patient's failure to follow a correct postoperative dietary régime to neurasthenia, a calculous diathesis or extensive and late pathological lesions found at the original operation. The conditions discovered at re-operation after cholecystectomy include adhesions, persistent chronic infection involving the pancreas, stone in one of the bile ducts, most often the common duct, enlargement of the glands along the common duct, especially the gland at its juncture with the duodenum, stricture of the common duct, carcinoma of the head of the pancreas and biliary fistula.

ARTHUR I. SHEFFIELD, M.D.

Bérard, I. and Mallet-Cuy, P. The Physiology and Technique of Cholecystogastrostomy. (*Physiologie et technique de la cholecystogastrostomie*) *J. de chir.* 1924, xxix, 321.

Cholecystogastrostomy has always met with opposition, the argument being that it is physiological. Jaboulay was the first to anastomose the gall bladder and stomach routinely in cases of irremediable obstruction of the common duct. His publications and those of Patel, Duchamp and Lerrin demonstrated twenty five years ago the possibility of this procedure and the excellence of its results. A perusal of the literature shows that Jaboulay and the school of Lyons saved the operation from being completely abandoned.

Experimental and clinical results demonstrate definitely that cholecystogastrostomy is the most rational of biliary anastomoses. The American Congress of Surgery of 1912 and the French Congress of 1923 were unanimous on this question.

The chief problems to be solved with regard to the operation are: (1) the permeability of the anastomosis; (2) the character of the stomach contents; (3) the biliary excretion; and (4) the character of the contents of the gall bladder.

Judd has stated that unless the common duct is completely obstructed the opening between the gall bladder and the stomach will not be utilized, but the authors have seen bile flow simultaneously by the duct and the anastomosis.

The permeability of the anastomosis can be established by repeated tests through the Rehfuess tube. The ordinary reflux of bile from the duodenum is easily distinguished.

Roentgen ray examination gives the following signs:

1. A diverticulum at the site of the anastomosis. Care must be taken not to confuse this with the duodenal bulb superimposed on the stomach.

2. An air bubble in the gall bladder. This must be distinguished from air in the duodenum or colon. Its appearance may coincide with the reflux of the opaque meal into the gall bladder.

As X-ray examination gives no information concerning the state of the cystic duct, which may be obliterated both aspiration and roentgenography must be employed.

The character of the gastric contents may be determined with the Rehfuess tube. Studies with the Rehfuess tube and the X-ray show that from the physiological standpoint there is nothing against cholecystogastrostomy. The form of the stomach is little modified in some cases the fasting stomach contains fluid.

The stomach contents remain acid regardless of the quantity of bile present. There are great variations in the acidity but in no case is the quantity of bile sufficient to neutralize the gastric juice. In one case a marked hyperacidity was observed.

Frequently a continent fistula is obtained, the flow of bile occurring only under stimulation by food or the usual duodenal excitants. By this adaptation the gall bladder conserves all its normal functions.

When the obstruction of the common duct is incomplete as in chronic pancreatitis, simultaneous tubage of the duodenum and stomach shows the degree of obstruction and the progress of the lesion. This method has demonstrated that the fistula and the common duct may both function at the same time.

Occasionally reflux of the gastric contents into the gall bladder is observed. To prevent this a technique has been developed which in no way complicates the operation. The antrum of the stomach is incised transversely, the powerful circular fibers being thus separated to form the mouth of the anastomosis. The gall bladder is sutured to the stomach with three layers of sutures, serous, muscular and mucous.

In conclusion the authors state that whatever the technique used, cholecystogastrostomy remains an operation of diversion and not a procedure for internal drainage. To drain effectively the anastomosis should be gaping and under such conditions the gall bladder suffers from contact with the gastric juice. Even with a technique not directed at a continent anastomosis such an anastomosis is usually obtained.

Reduced to its true rôle, cholecystogastrostomy is an operation of great value in the treatment of biliary obstruction and certain painful gall bladder syndromes without stone and without localized cholecystitis.

ALBERT F. DE GROOT, M.D.

Judd, E. S. and Parker, B. R. Biliary Intestinal Anastomosis for Obstructive Jaundice. Analysis of 137 Consecutive Cases. *Arch. S.* 1923, xvii, 1.

This article is an analysis of 137 consecutive cases in which anastomosis of the biliary and gastrointestinal tracts was carried out at the Mayo Clinic in the period from 1910 to 1924 inclusive.

Contrary to the usual teaching that painless jaundice signifies a malignant condition, it was found that 61.75 per cent of the patients with carcinoma of the pancreas and 66.66 per cent of those with carcinoma of the ducts had pain or colic or both. In the series of cases in which it was impossible at the time of operation to say definitely whether the

condition was carcinoma of the pancreas or pancreatitis pain or colics occurred in only 28.56 per cent and in the cases of pancreatitis these symptoms were present in 54.54 per cent.

Pain and colics seem to have a definite relation ship to the prognosis. It was found that in the cases of malignancy with these symptoms the life expectancy was longer and in the cases of benign conditions the end results of surgery were better than in others.

Of the patients with benign stricture of the bile ducts requiring biliary intestinal anastomosis all but 1 had had previous operations on the bile tract. The average period of relief was four and seven tenths months. Some of the strictures were probably due to trauma at the time of the first operation but doubtless many were caused by the continuation of an obliterative cholangitis due to inadequate drainage of bile.

In cases in which there was a reasonable chance that the patient would survive the operation the end results of biliary intestinal anastomosis were satisfactory. In malignant conditions this operation was only a palliative measure. In the benign conditions the anastomosis of the biliary and intestinal tracts was satisfactory when there was sufficient tissue available for a technically correct operation.

In the 137 cases studied there were 9 instances of partial or complete contraction of the stoma of the anastomosis requiring a reconstruction operation. In 7 of the 9 a hepaticoduodenostomy or hepatico gastrostomy was done.

**Retterer E. Structural and Evolutive Variations in the Pancreas During Fasting After Transplantation and After Resection of the Excretory Ducts** (Variations évolutives et structurales du pancréas pendant le jeûne la greffe ou après la résection des canaux excréteurs) *Ann. d'anal. path.* 1928 v 97

In spite of innumerable investigations the element that presides over the metabolism of sugar remains obscure.

It is generally believed that the glandular cul de sac of the pancreas are concerned only with the external secretion while the islets of Langerhans like the interstitial gland of the testicle produce the internal secretion. When the pancreatic ducts are ligated or the gland is transplanted the epithelium of the acini is said to degenerate while that of the islets hypertrophies.

The course of events being entirely different in the testicle the author has studied the evolution of the pancreas during fasting following resection of the ducts and after transplantation for comparison.

Under normal conditions the epithelium of the pancreas is not permanent. The cells divide giving rise to the so called centro acinous cells which after fulfilling their secretory function disappear. The lumen of the acini is maintained by liquefaction of the protoplasm of the cells and in the same manner the intracellular secretory canaliculi are formed.

After fasting resection of the ducts or transplantation the acini become transformed into solid cords and eventually the cells are changed into fibroblasts.

Since the discovery of the islets by Langerhans the nature of these islets has been variously interpreted. Physiologists have regarded them as the source of the internal secretion governing the metabolism of sugar. It is generally agreed that their origin and the origin of the acini is the same but that a specialization occurs. It seems also that the islets may revert to acini.

In the fasting animal many of the acini lose their lumen and take on the reticulated appearance of islets. This change is associated with a certain degree of pycnosis. Moreover erythrocytes may be found among the cells.

Following resection of the pancreatic ducts the modifications of the tissue take place from the tail toward the head and from the surface toward the interior.

For a long time (seven months) the acini in the center of the gland remain normal except for an increase in size.

The periphery of the gland consists of fibrous tissue in which are wide open canals limited by small flat cells arranged concentrically. In places the lumen is absent and there is only a cord of cells. The transition of these cells to the cells of the surrounding connective tissue is continuous.

This finding has been interpreted by most investigators as the result of the degeneration of the epithelial cells with proliferation of the surrounding stroma. However mitotic figures are never seen and the author believes that the epithelial cells evolve directly into fibroblasts.

Whether these remnants of epithelial cells furnish the internal secretion which prevents glycosuria remains to be determined by allowing enough time for complete degeneration of the entire gland.

Following resection of the ducts the center of the gland shows large masses of reticulated tissue resembling connective tissue in appearance but found on careful study to be modified epithelium. This tissue is identical in structure with the islets. In reality the masses represent acini which have been modified by the loss of their secretory function.

In a graft this process occurs much more rapidly and in a few hours there is a dissolution of cytoplasm with a degree of pycnosis and the tissue takes on a reticulated appearance.

The degenerative changes produce a tissue identical with that of the islets. However the cells continue to produce an internal secretion until they become frankly fibroblasts and connective tissue cells. This explains why large areas of reticulated tissue (supposed islets) are found in the pancreas of diabetics and why some pathologists refuse to see in the islets organs of internal secretion.

The evolution of the epithelium into fibrous tissue with eventual loss of both external and internal secretion has not as yet been clearly proved in the

pancreas but has been demonstrated in the testicle. With degeneration of the epithelium and its complete transformation into fibrous tissue the internal secretion ceases.

ALBERT T. DE CROAT, M.D.

### MISCELLANEOUS

Graham, F. A. Some Functional Tests and Their Significance. *New England J. Med.* 1923 cxcix, 1.

Graham emphasizes the importance of studies of function in the early recognition of mild disturbances. Severe disturbances sufficient to be recognizable by anatomical changes are often very late effects and their presence frequently indicates neglect. Improvements in diagnosis must inevitably come from methods which will enable us to recognize functional disturbances before marked anatomical changes have taken place.

Cholecystography is a functional test of the gall bladder. It is known that the gall bladder concentrates its contained bile by the absorption of water and during digestion pours the concentrated bile through the cystic and common ducts into the duodenum. In addition it is probably concerned in some manner with cholesterol metabolism. The two functions of the gall bladder which are known with certainty—its concentrating action and its emptying—can be studied by cholecystography.

The densest phthalein dye shadows are obtained in normal gall bladders since concentration is accomplished by the absorption of water. Theoretically failure of visualization may indicate impairment of the excretory power of the liver, blockage of the cystic duct or impairment of the ability of the gall bladder to concentrate its contents, but experience indicates that if the intravenous technique has been carefully carried out failure of visualization is due in nearly all instances (about 90 per cent) to impairment of the function of concentration by the gall bladder. A gall bladder which fails to cast a shadow may be the cause of discomfort and dyspeptic symptoms even if no marked pathological changes are apparent on macroscopic examination. However, in nearly every instance of non-visualization excluding cases of impaired liver secretion such as those of cirrhosis, hepatitis and hepatic edema, definite pathological findings will be evident. In practically all of fifty-two cases collected by the author in which a gall bladder not visualized or visualized only faintly was removed in the absence of macroscopic evidence of disease the symptoms were relieved after one year or more. Cholecystography is more valuable in diagnosis because it is a functional test than it would be if it merely revealed anatomical changes.

An important test of the excretory function of the liver is the phenoltetra iodophthalein test. Normally about 12 per cent of the dye is present in the blood serum half an hour after its injection and about 3 per cent is found in the blood serum at the end of one hour. In cholecystitis the average retention is about twice normal in the one half hour period. This favors the view that cholecystitis is accompanied by constant hepatitis. Persons with obstructive jaundice from malignant disease show much less retention than those with jaundice due to stone in the common duct or with the condition called catarrhal icterus.

The retention of dye in the blood serum is an index to the operative risk. The greater the retention the greater the risk.

Phenoltetra iodophthalein may be used for simultaneous cholecystography and determination of the excretory function of the liver.

The function of the pancreas is determined from the amylase content of the blood since in pancreatic disease the amount of this ferment in the blood varies from the normal. A definite amount of blood plasma is mixed with a definite amount of starch solution whose viscosity is reduced in proportion to the contained amylase. The viscosity is determined by the time taken for the solution to pass through a viscosimeter. Graham places great reliance on this test and favors it also because it is simple and can be run quickly.

A new test meal is based on the normal regulation of alkaline pancreatic (duodenal) juice into the stomach. In this functional test 300 c.c. of a 0.5 per cent solution of hydrochloric acid (the concentration at which the acid is normally secreted) are introduced into the stomach and the time necessary for neutralization is noted. Normally neutralization is accomplished in twenty minutes. In cases of peptic ulcer near the pylorus it is surprising to find a relatively high gastric acidity if the lesion interferes with the duodenal reflux.

The use of the cystometer which measures and records changes in volume and pressure within the urinary bladder is another important advance in studies of function. By means of this instrument devised by Rose it is possible to differentiate with accuracy between disturbances of the bladder of neurogenic and other origins.

Graham reminds us also that X-ray examination of the gastro-intestinal tract with the barium meal is largely a functional test. Certain disturbances in the motor functions, filling and emptying, which we now know how to evaluate when they are revealed by the X-ray have for the most part been responsible for the revolutionary diagnostic effect of the barium meal.

MAURICE MEYERS, M.D.

# GYNECOLOGY

## UTERUS

**Barrows D N** The Olshausen Operation for Retroversion of the Uterus *Am J Obst & Gynec* 1928 xvi 61

Barrows reviews a series of 571 cases of retroversion of the uterus corrected by the Olshausen operation. He compares the results of this operation after a period of seven years with the corresponding results of the Webster Baldy operation in 209 cases and the Montgomery Simpson operation in 271 cases. The incidence of cure was as follows: Olshausen operation 91 per cent, Webster Baldy operation 83 per cent, and Montgomery Simpson operation 93 per cent. As regards pregnancy there is little choice between the three methods.

Strong points in favor of the Olshausen procedure are that the silk ligature rarely causes trouble, intestinal obstruction following the operation is rare, and the operation is easy and rapid and causes little trauma to adjacent anatomical structures.

E L CORNELL M D

**Rubin I C** The Diagnostic Use of Intra Uterine Iodized Oil Injection Combined with the X Rays as Compared with Peruterine CO<sub>2</sub> Insufflation. A Study Based on Sixty Six Cases of Tubal Obstruction. *Radiology* 1928 xi 115

The patency or non patency of the fallopian tubes can be demonstrated with certainty by peruterine insufflation of carbon dioxide. As a rule the introduction of iodized oil into the uterus to determine the site of an obstruction is not necessary as the kymographic record and the fluoroscopic findings at the time of the insufflation are usually sufficient.

Of sixty six cases in which the author employed lipiodol injections as a check upon insufflation the results were in agreement in sixty cases. The six cases in which there was a disagreement were those of patients with high grade strictures. In high grade strictures the method in which the greater degree of pressure is ventured is most apt to be followed by penetration of the structure.

Rubin decidedly prefers the insufflation of carbon dioxide to the injection of lipiodol because it is just as effective in demonstrating patency, it is simpler and less dangerous, it may be repeated, it does not require the aid of a roentgenologist, and the carbon dioxide is rapidly absorbed and leaves no trace in the peritoneal cavity. In some cases however the carbon dioxide may be absorbed so rapidly as to escape detection or may be confined in the pelvis by adhesions so that no subdiaphragmatic gas bubble appears.

Insufflation is superior to lipiodol in demonstrating tubal spasm and impairment of function, both of

which are recorded on the kymographic tracing. In doubtful cases and those in which operative relief of tubal obstruction is desired lipiodol should be used. Lipiodol is valuable also in demonstrating submucous myomata of the uterus. The contra indications are the same for both methods.

CHARLES H HEADCOCK M D

**Dickinson R L** Rebellious Cervicitis from Cysts High in the Canal. *Am J Obst & Gynec* 1928 xvi 11

For the elimination of latent gonorrheal foci in women Dickinson recommends repeated cauterization of cysts high up into the cervical canal and even beyond the internal os. This treatment may be begun by evacuating the cysts low in the canal by gouging out, and then working upward. In the search for the cysts especially when they exude a glairy mucus cervical endoscopy is of great aid.

The procedure is recommended especially for women in the child bearing age. In none of the author's cases has it been followed by sufficient cicatricial tissue to obstruct labor.

E L CORNELL M D

**Healy W P and Cutler M** The Relation between Structure and Prognosis in Cervical Carcinoma under Radiation Treatment. *Am J Obst & Gynec* 1928 xvi 15

Healy and Cutler review the end results obtained in 300 cases of carcinoma of the cervix treated by radiation alone. They divide cases of this condition clinically into the following three groups:

Group 1. Early cases in which the disease is localized and confined to the cervix.

Group 2. Borderline cases in which the disease is more advanced with involvement of the paracervical tissues and the vaginal fornices and slight fixation of the cervix, but the uterus is still freely movable.

Group 3. Advanced cases in which the disease extends beyond the uterus into the parametrium and there is more definite fixation of the uterus.

In the cases reviewed radium in massive doses was applied at the site of the primary lesion and supplementary X ray irradiation was given. The circumference of the pelvis was divided into four quadrants. One treatment was given each quadrant, the tube being so placed as to be centered on the cervical lesion.

The basis of histological classification adopted was the degree of anaplasia of the tumor. The significant histological signs of anaplasia are cellularity, variation in the size and shape of the nuclei, nuclear hyperchromatism, an infiltrative tendency, an increased number and a typical quality of the mitoses, loss of polarity and absence of adult differentiated characters.

The conclusions drawn were as follows:

The degree of malignancy of a given case of carcinoma of the cervix may be determined fairly accurately from a study of the histological structure. Such information may be of value in both the prognosis and the treatment. On the basis of the degree of anaplasia epidermoid carcinomata of the cervix may be classified into three groups which correspond closely to the three degrees of malignancy.

The adult type of carcinoma of the cervix is markedly resistant to radiation; the anaplastic type is highly radiosensitive and the plexiform type occupies an intermediate position.

In cases of carcinoma treated by radiation the most important factors in the prognosis are probably the stage at which the treatment is begun and the radio-sensitivity of the tumor. From 30 to 25 per cent of carcinomata of the cervix are histologically very cellular, malignant and anaplastic and therefore highly susceptible to radiation. Under radiation the prognosis improves with the degree of anaplasia of the tumor, this fact accounting for a high percentage of cures in a group of cases in which the results of surgery have been unfavorable. In cases of advanced carcinoma radiation may result in a cure in a large proportion of cases if the tumors are of the radiosensitive type, but if the tumors are of the radioresistant type only palliation can be expected.

E. L. CORVELL, M.D.

**Pack, G. T.** The Management of Uterine Malignancies at the Radium Institute of the University of Paris. *South M. J.* 1923 xv 505.

Lack describes the management of uterine malignancy at the Radium Institute of the University of Paris and supplements this report with personal observations and comments.

In discussing the histological and bacteriological study preliminary to the uterovaginal application of radium he advises the ablation or curettage of cancerous vegetations of the uterine cervix because it facilitates treatment, suppresses suppuration from the infected cervix, frees the implantation of the cervical tumor from the orifice of the uterine canal, permits closer approximation of the radium to the outlying cancer tissue, favors cicatrization, and lessens the danger of toxemia from absorption.

With regard to the technique of radium irradiation he states that there are fundamental factors influencing the dosage, such as radiosensitivity and its variations, factors inherent in the histological structure of the lesion and the composition of connective tissue, the influence of infection, acquired radioresistance, artificial radiosensibilization, the factor of time, and the quantities of rays absorbed.

The contra indications to irradiation within the uterus and vagina are a state of radioresistance following a series of previous treatments, the presence of a local or general infectious state that cannot be suppressed, cachexia caused by anemia following repeated hemorrhages, uræmia from compression of the ureters, concomitant grave chronic or acute af-

fections such as diabetes, Bright's disease, cirrhosis of the liver, cardiopathy, pulmonary tuberculosis, and generalization of the cancer in the peritoneum or other viscera.

The advantages of external radium therapy over roentgen therapy are greater specificity or selectivity of action, the constancy of the emission rate of radium, and simplicity of technique.

Internal radium therapy is of value in cases of very advanced cancer in which irradiation by the uterovaginal route would be impractical, futile or dangerous, in cases of inoperable cancer or those at the limit of operability in which irradiation by the uterovaginal route would be insufficient and in cases of recurrence after hysterectomy. The radium block is applied over from six to eight areas depending upon the nature of the case and the size of the patient.

The interstitial use of radium in this region is dangerous. When radium puncture and intra uterine and vaginal irradiation are employed simultaneously, secondary rays may be produced by the impingement of gamma rays on the platinum needles or seeds. Such beta therapy increases the danger of radium necrosis.

The indications for roentgen therapy alone are the same as those for external radium therapy. It is considered best to have the surgery follow the radium treatment. If the cancer is operable and the patient is in good condition, hysterectomy is not rendered difficult by a previous radium therapy. A previous internal uterovaginal radiation aseptizes the vagina and heals the malignant ulcer. The author is of the opinion that the employment of the two methods successively increases the chances of effecting a cure without greatly increasing the risk. The interval of time between the radium treatment and the operation should be about two months.

The inefficiency of the X rays in the treatment of recurrences following previous radium therapy was reported by Regaud in 1923 with regard to epitheliomata of the skin and mucous membranes in general. The X rays are especially inefficient after radium therapy by the uterovaginal method. Roentgen therapy should be administered first and followed by radium therapy immediately or after a very short period of rest.

The author gives the usual classification of cancers of the cervix uteri according to the prognosis and then summarizes the therapeutic indications as follows:

The cancers most suitable for surgical treatment are (1) adenocarcinoma of the cervix, (2) cancers associated with adnexal infection, (3) cancers persisting after radium therapy, and (4) cancers associated with certain vaginal malformations. In all other operable cases in good condition uterovaginal radium therapy is indicated. This is preferable to hysterectomy. Hysterectomy may be successful in some cases, but only a few of the total number of patients coming to consultation can be operated upon safely.

Hysterectomy after internal radium therapy gives good results only in cases which were apparently operable before the radium treatment. Hysterectomy followed by radium therapy is indicated only in those rare cases in which there is malformation or occlusion of the vagina and uterus.

Röntgen therapy alone or external radium therapy at a distance is the method of choice in inoperable cases in which the condition of the uterus and vagina does not permit the correct use of radium. It is the necessary method when recurrence follows hysterectomy.

The use of the X rays or radium at a distance in conjunction with the uterovaginal application of radium is the correct method when the parametrium is invaded.

Carcinoma of the body of the uterus if operable should be treated by complete hysterectomy. When it is inoperable radium irradiation is the method of choice.

External radiation is given preferably with the large radium box or pack. If X ray treatment is given it should always precede radium treatment.

ROLAND S. CRON, M.D.

Cox, D. M. and Benischek, W. L. Mixed Tumors of the Cervix Uteri. Sarcoma Botryoides with a Report of Two Cases. *Am J Obst & Gynec* 1925 xvi 25.

The two cases reported in this article were those of a child two years of age and a woman twenty nine years of age.

The authors state that mixed tumors of the cervix are comparatively rare. They are of mesodermal origin. The connective tissue element is usually the most prominent. The neoplasms resemble and are frequently described as sarcomata. They may occur at any age but unlike vaginal mixed tumors which are most common in infancy they are found most frequently in adults. In infants they usually appear as polypoid masses. In adults their appearance is less constant but they may be similar to the grape like tumors which occur in children. They may arise from the vaginal surface of the cervix or protrude from the cervical canal. When they resemble sarcomata the metastases frequently have typical botryoid characteristics.

Mixed tumors of the uterus are found most often in the cervix. The clinical picture varies considerably. In the infant the tumor is usually first discovered when it appears at the vulva although its appearance may be preceded by a bloody discharge. In the adult the most common signs and symptoms are a foul blood stained discharge, dyspareunia or a mass in the vagina. In some cases there may be backache, a feeling of weight in the vagina or a bearing down sensation. When the grape like bodies are expelled they are sometimes mistaken for hydatidiform mole. In the cases of children the growth is usually thought to be a simple polyp and excision is advised. After excision it quickly recurs and its malignant nature is then suspected. The extreme

malignancy of these tumors is shown by the fact that there are no permanent cures on record.

According to Kolisko and Hauser these tumors arise from fetal rests. Wilms believes that they are of developmental origin and due to a displaced embryonal germ cell pushed down ahead of the Wolffian duct. Franks states that this indifferent germ cell must be mesodermal in order to supply the myotome derivatives.

The authors' cases were treated by operation followed by radium irradiation. In both metastases and recurrences developed and death resulted.

F. L. CORNELL, M.D.

## EXTERNAL GENITALIA

Garlock, J. H. The Cure of an Intractable Vesicovaginal Fistula by the Use of a Pedicled Muscle Flap: A New Concept. *Surg Gynec & Obst* 1918 xlvii 255.

Garlock reports a case in which a large urethrovesicovaginal fistula was closed by means of a pedunculated muscle flap taken from the inner side of a thigh in the form of the gracilis muscle and intra-vesical suction was continued for twenty four days without evidence of vesical infection.

CARL H. DAVIS, M.D.

## MISCELLANEOUS

Petit Dutailh, P. Contributions on Roentgenology of the Pelvis (Contributions diverses à la radiologie pelvienne). *Bull Soc d'obst et de gynec de Par* 1928 xvii 490.

The author discusses a number of cases diagnosed by the intra uterine injection of lipiodol including one case of clonism and hypertonia of the uterine musculature, two cases of hypotonia resulting from general weakness, one with prolapse and apparent elongation of the supravaginal part of the cervix and the other with retroflexion of the uterus, one case in which the pelvic segments of the intestine were shown by the injection, and one case of pelvic appendicitis in which the injection of lipiodol into the uterus and tubes was combined with caecal roentgenoscopy.

Following his report of these cases Petit Dutailh reviews the great advances that have been made in the lipiodol method since it was first used to determine the permeability of the fallopian tubes. Lipiodol is now employed not only to investigate the condition of the genital tract but also to outline the organs surrounding the genitals. Baciéra has used it to demonstrate spina bifida. With roentgenography of the ureters after the insertion of retention catheters and roentgenography of the bladder after the injection of an opaque fluid it may be employed to determine the exact site and relations of intraligamentous tumors.

It is of value also in treatment as it has the therapeutic properties of tincture of iodine and is not irritating. The author reports a case in which

it was used in the treatment of bilateral chronic salpingitis following tuberculous peritonitis. He states that he intends to try it also in chronic endocervicitis. **AUDRY G. MORGAN, M.D.**

**Meigs J. V.** Radium and Its Use in Gynecology. *New England J. Med.* 1918, cxcix, 258.

The author's discussion on the use of radium in gynecology includes a brief review of the history of radium and radium therapy in general. The physics of radium is briefly explained with regard to the formation of radon and with regard to the alpha beta and gamma rays with their properties, biological uses and availability for treatment. Special reference is made to screens or filters, methods of describing dosage, cross firing, the distance between the radium and the skin or the lesion to be treated and the importance of secondary or scattered rays.

Beta rays because they are caustic and capable of producing complete necrosis in relatively small doses (15 mc hrs steel screened may be used to treat a small epithelioma 1 cm square) are of value for the destruction of carcinoma of the cervix. The destruction is as certain as that produced with the knife. Normal as well as pathological cells are destroyed by the beta rays. At best however beta irradiation is a superficial therapeutic measure as 99.9 per cent of the beta rays are absorbed by 13 mm of tissue. When metals are used to absorb the beta rays the gamma rays cause a more quiet destruction of the cancer cells with the death of normal cells only adjacent to the applicator. Apparently gamma rays have a more selective action upon tumor cells.

As the intensity of radiation from radium decreases inversely as the square of the distance the radiologists at St. Bartholomew's Hospital in London divide the radium into numerous applicators and distribute them evenly throughout the involved tissue. In France gamma radiation is believed to destroy the dividing cell whereas in England it is believed to prevent division. Therefore in England it is believed that a certain minimum amount of radiation prevents cells from beginning mitosis and that very large amounts will not improve the results. Donaldson and Cantu are of the opinion that at the end of twenty four hours mitosis ceases only to recur abnormally in four days. Therefore in cases of cancer of the cervix Donaldson uses 30 mgm in many applicators about the periphery of the lesion for one hundred and forty four hours. His results are as yet to be evaluated. Keynes has convinced the staff of St. Bartholomew's Hospital of the superiority of this method also in the treatment of cancer of the breast. In the opinion of several authorities the use of a small amount of radium over a long period of time may be more valuable than the use of a large amount over a short period.

Deep tumors which are inaccessible to the implantation of radon are usually treated with deep X rays but in some clinics packs of 5 gm of radium have been employed with considerable success.

The morphological changes due to radium are characterized by early swelling of the cells, hyperchromatism of nuclei, local hyperemia, leucocytosis and the occasional rupture of capillaries. Later the destroyed tumor tissue is removed and the blood supply to the tumor is decreased by thickening and eventual obliteration of the arterioles. Eventually connective tissue with a scant blood supply is formed. Any remaining cancer cells are thus incarcerated and often rendered innocuous for years.

As it is evident that undifferentiated cells are more susceptible to radiation than adult cells it may be advisable to give milder doses to highly malignant cells and higher doses to tumors of low malignancy or to excise the latter. Infection especially with the hemolytic streptococcus while not influencing the susceptibility of the tumor cells impedes the formation of connective tissue. Recurrences do not respond well to radiation hence it is imperative that the initial treatment be adequate.

Tumors of the vulva or clitoris are treated by excision followed by X ray treatment when they are operable and interstitially with radium when surgery is contra indicated. In operable cancer of the cervix radium treatment is the method of choice as its results are as satisfactory as those of surgery and it is associated with no mortality. In inoperable cases surgery cannot compare with radium. In early cases radium in thin steel containers the beta rays being employed is placed in the cervical canal and glass implants are used interstitially. In advanced cases silver or brass screened applicators are used and gold implants may or may not be inserted. Even in extensive lesions improvement is noted in three months. In widely fixed disease the X ray may alleviate pain.

In operable cancer of the fundus hysterectomy is the method of choice. When operation is contra indicated the use of radium is occasionally advisable. A large dose of screened radium is given blindly in the uterine cavity. Cancer of the vagina does not respond well to any method of treatment. When surgery cannot be done radon implants and gamma ray therapy are used carefully. In sarcoma of the vagina deep X rays or powerful radium packs are of value after surgery in operable cases or without operation when surgery is contra indicated.

In benign uterine bleeding the cause of which cannot be located radium is at its best. A cure in 90 per cent of the cases being not uncommon. In the cases of young women the dose should not exceed 300 mc hrs. In those of women near the menopause a dose up to 1500 mc hrs in a silver and brass capsule may be given. In the cases of young women small doses may be repeated.

Radium is of great value for bleeding fibroids but is definitely contra indicated when the woman is under forty years of age and when the tumor is pedunculated or very large or grows rapidly. When conditions are favorable it usually causes a reduction in the size of the tumor within six months. Its results are best in the cases of women about forty

years of age who have a symmetrically enlarged uterus not larger than a three months pregnancy. In such cases radium is superior to surgery. It may give good results also in cases in which surgery would ordinarily be employed and is contra-indicated on account of some general condition. The dose is from 1500 to 2500 mc hrs of gamma rays placed well up in the uterine cavity.

Radium may be used also at the site of a removed cervical or uterine polyp. If it is advisable to preserve menstrual function the dosage should be small.

In endocervicitis 300 mc hrs with heavy screening may give good results.

The author emphasizes that irradiation of the bleeding uterus should be preceded by diagnostic curettage. A. JAMES LARKIN, M.D.

Morse A H and Perry I H. A Diffuse Pelvic Endometrioma Constricting the Ureters. *Am J Obst & Gynec* 1928 xvi 38.

The patient whose case is reported was under observation for a period of five years. Death followed an operation for abscess of the kidney or pyelitis. At autopsy the uterus was found distorted by the tumor and the associated inflammatory changes throughout the pelvic viscera but otherwise was quite normal. The lumina of the rectum

and ureters were markedly constricted. This accounting for the patient's complaint of constipation for two years and the severe pain associated with micturition.

Histologically the tumor consisted of connective tissue with scattered islands of dilated glands lined with low columnar epithelium. In some of the gland lumina particles of brown pigment and shadows of red blood corpuscles were clearly seen. The neoplasm was undoubtedly a diffuse endometrioma. The gland structures were quite similar to those of the uterus and the epithelial linings and stroma were quite similar to those found in the endometrium.

The presence of pigment and red blood cells in the gland lumina indicates that these glandular ectopic structures went through the phases of the menstrual cycle. Clinically it was noted that the acute attacks of pain occurred at the onset of the menstrual periods. The cells were probably not deposited from a secondary endometrial cyst of the ovaries as the ovaries were normal. It appears that the epithelial structures probably had their origin in the tubal mucosa or the cavity of the uterus as suggested by Sampson. The bilateral renal lesions were probably due to pressure of the pelvic mass which encroached upon and constricted both ureters.

L. L. CORNELL, M.D.



# OBSTETRICS

## PREGNANCY AND ITS COMPLICATIONS

Titus P. and Dodds P. The Etiological Significance of Lowered Blood Sugar Values in the Vomiting of Pregnancy. *Br J Obst & Gynec* 1923 xvi 95

Titus and Dodds have studied a series of forty cases of hyperemesis gravidarum of moderately severe and very severe grade with special reference to the etiological significance of lowered blood sugar values in this condition. Their work was carefully checked by blood sugar determinations at the beginning and during the course of the treatment while the patients were in the hospital. An attempt was made also to follow up the patients after six months and one year.

From the successful results of their carbohydrate therapy the authors conclude that the chief factor in the toxæmia of pregnancy is a deficiency in carbohydrates. The sudden drop in the blood sugar in eclampsia and eclamptic seizures suggests that carbohydrate deficiency may be responsible also for these conditions.

In cases of hyperemesis the blood sugar readings indicate a hypoglycæmia and are lowest in the cases of women who are most profoundly affected by the toxæmia. In fulminating cases of hyperemesis with acute yellow atrophy of the liver convulsions occur early in pregnancy which are comparable to typical eclamptic seizures later in pregnancy.

The use of insulin without glucose in hyperemesis is dangerous. Careful laboratory control of the blood chemistry in these cases with special reference to the blood sugar is essential. The authors cite a case of pregnancy complicated by diabetic coma and a blood sugar reading of 230 mgm per 100 c cm of blood in which they believe death would have resulted if sugar had been administered.

I. I. CORVILL M.D.

Ivens F. Latent Sepsis in Pregnancy Toxæmia. *J Obst & Gynaec Brit Emp* 1923 xxiv 307

Since the toxic manifestations of pregnancy are closely allied it seems logical to expect a common cause and a bacterial cause appears to be the most probable. If organisms are circulating in the body in these toxæmias it is to be expected that they will be excreted in the urine. In thirteen cases with all urinaemia and edema coliform organisms were found in the urine usually with pus and sometimes with blood. In the urine of two women with pernicious vomiting of pregnancy mobile bacilli were found. In a case of severe jaundice the urine contained pus cells, colon bacilli and bile. In this case the colon bacillus infection had probably extended to the bile ducts. In the case of a patient with

hyperemesis and jaundice the urine contained albumin, acetone, bile leucocytes and a few coliform organisms but blood cultures were negative. Organisms were found in the urine also in four cases of accidental hemorrhage. T. FLOYD BELL, M.D.

Ferguson L. K. and Priestley J. T. The Relation of Gall Bladder Disease to Pregnancy. *Am J Obst & Gynec* 1923 xvi 83

In an investigation of the relationship between gall bladder disease and pregnancy the authors found that of a series of 112 women with gall bladder disease 95 (84.8 per cent) had borne children and 20 of the latter stated that their first attack occurred during or shortly after their first pregnancy.

In cases of cholelithiasis the stones were composed largely of cholesterol only. This is an interesting observation inasmuch as pregnancy is frequently associated with a definite hypercholesterolemia which undoubtedly predisposes to the formation of gall stones. Because of this association of pregnancy hypercholesterolemia and gall stones the prophylactic treatment should be directed toward keeping the blood cholesterol at the lowest possible level during pregnancy. The cholesterol of the blood is dependent largely upon the diet. Therefore the use of cholesterol containing foods should be restricted. Among such foods are fats, egg yolk, fried foods, sweetbreads, liver, kidney, pork, butter and cheese. T. L. CORVILL, M.D.

## LABOR AND ITS COMPLICATIONS

Miller D. Unsuccessful Forceps Cases. Causation, Management and End Results. *Brit M J* 1923 ii 181

Hendry J. How Far Can Unsuccessful Forceps Cases Be Prevented by Efficient Antenatal Care? *Brit M J* 1923 ii 185

Shaw W. F. Unsuccessful Forceps Cases. The Need for a Higher Standard. *Brit M J* 1923 ii 185

MILLER discusses the reasons for the unsuccessful application of forceps in 558 cases—281 from Shaw's service in Manchester, 125 from Hendry's service in Glasgow and 152 from the Edinburgh Royal Maternity Hospital.

In 211 cases the cause of the dystocia was disproportion. In the majority the disproportion was due to pelvic contraction and in a small number to abnormal size of the child. In 6 cases the cause was a contraction ring of the uterus. The pelvis were chiefly flat rachitic and generally contracted but in 14 cases there was a deformity of the pelvic outlet.

In more than one-half of the 211 cases the head was freely movable at the brim when the patient was admitted to the hospital. In many the disproportion

tion was so extreme that extraction was difficult even after the head was crushed. In others the head was engaging satisfactorily and would have descended had assistance been withheld until the head had moulded more and the birth passage had become more fully dilated.

In 161 cases the cause of the dystocia was a posterior position of the occiput. The fact that in the majority this had not been diagnosed shows the need of careful examination before application of forceps in order to determine the exact position of the head.

In 151 cases, the pelvis, the size of the baby, the presentation and the position were normal but Miller believes that some of these were cases of occiput posterior in which anterior rotation had occurred after the application of forceps while the patient was being taken to the hospital. In a large number delivery had been attempted before there was sufficient dilatation of the soft passages or moulding of the head. Many of the patients had had a prolonged first stage and no doubt the anxious, excited relatives and their importunities had caused the attending physician to act against his better judgment.

A fourth group included 12 cases of face presentation (5 of them mentum posterior), 8 of brow presentation, 8 of hydrocephalus, 2 of breech presentation, 2 of shoulder presentation, 2 of ovarian tumor obstructing labor, and 1 case of locked twins.

Shock was found not an infrequent complication and in some of the cases influenced the treatment.

Of the women in the first group 78 were delivered spontaneously or by low forceps, showing that further moulding of the head had overcome the disproportion. 15 were delivered by high forceps, 8 by version, 98 by craniotomy, and 12 by cesarean section. Eubiotomy was not done in any case. There were 29 maternal deaths and 154 fetal deaths. The causes of the maternal deaths were puerperal sepsis in 21 cases, postpartum shock in 3 cases, postpartum hemorrhage in 2 cases, shock and collapse associated with rupture of the uterus in 2 cases, and pneumonia in 1 case.

Of the women with an occiput posterior position of the fetal head a large number were delivered by forceps after manual rotation to anterior. 15 were delivered spontaneously, 98 by forceps, 11 by version, 37 by craniotomy, and 3 by cesarean section. There were 116 maternal deaths and 100 fetal deaths. The death of the mother was due to sepsis in 11 cases, rupture of the uterus in 4 cases, and pneumonia in 1 case.

In the majority of the cases in the third group morphine was given or twilight sleep was induced and the labor allowed to continue until delivery was effected spontaneously or by low forceps. Forty-seven of the women were delivered spontaneously, 75 by forceps, 9 by version, 18 by craniotomy, and 2 by cesarean section. There were 9 maternal and 78 fetal deaths. The death of the mother was

due to sepsis in 5 cases, rupture of the uterus in 2 cases, postpartum shock in 1 case, and pneumonia in 1 case.

Miller states that many of these disasters could have been prevented by recognition of the abnormality—pelvic contraction or over size of the child before delivery. They show the danger of applying the forceps on the floating head and without accurate knowledge of the position of the head.

Hendry, in discussing how far the unsuccessful application of forceps can be prevented by efficient antenatal care, emphasizes that careful external and internal pelvic measurements should be made and skeletal deformities noted. Internal examination is essential. Besides measuring the diagonal conjugate, the obstetrician should palpate the pelvic brim all around. Fibroids or ovarian cysts which might obstruct labor should be detected. A pendulous abdomen in the case of a primigravida should always arouse suspicion. In primigravida the head should descend into the pelvis during the last month. Its failure to descend is very often due to contracted pelvis, but in some cases the cause may be a faulty presentation—neoplasm or placenta previa.

In doubtful cases at term the best pelvimeter of all—the fetal head—is available. Hendry recommends the modification of Muller's method so long advocated by Munro Kerr.

Hendry calls attention to the fact that there is an essential difference in the prognosis of labor in a generally contracted and in a flat rachitic pelvis. In the flat rachitic pelvis there is usually enough space in the lateral bays on each side of the promontory for the head to engage transversely and make its way through the brim by descent of the occiput through one of the bays. In a generally contracted pelvis, however, the total area of the brim is small and the head can pass through only in extreme flexion. The extreme flexion makes traction with forceps difficult as only an insecure hold is obtained.

The history of difficult or instrumental deliveries in previous pregnancies should put the obstetrician on guard for a repetition.

Absolute measurement by the X-ray is not of great value except in extreme cases. The position of the head at the brim before the onset of labor does not give any indication as to how the head will mould or alter its position and relationship under the influence of uterine contractions.

In Hendry's borderline cases of contracted pelvis the patient is allowed a good long labor and a lower uterine segment cesarean section is done if progress is not satisfactory. To decrease the risk of infection examinations are made by rectum instead of by vagina.

Occiput posterior positions should be diagnosed without much difficulty. Some of them can be changed to anterior positions by the use of pads and binders. From 60 to 80 per cent rotate spontaneously. The important point is to recognize the association of this malposition with a protracted labor. Dilatation of the cervix is often slow. The

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E L CORBELL M D

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tion was so extreme that extraction was difficult even after the head was crushed. In others the head was engaging satisfactorily and would have descended had assistance been withheld until the head had moulded more and the birth passage had become more fully dilated.

In 161 cases the cause of the dystocia was a posterior position of the occiput. The fact that in the majority this had not been diagnosed shows the need of careful examination before application of forceps in order to determine the exact position of the head.

In 151 cases the pelvis the size of the baby the presentation and the position were normal but Miller believes that some of these were cases of occiput posterior in which anterior rotation had occurred after the application of forceps while the patient was being taken to the hospital. In a large number delivery had been attempted before there was sufficient dilatation of the soft passages or moulding of the head. Many of the patients had had a prolonged first stage and no doubt the anxious excited relatives and their importunities had caused the attending physician to act against his better judgment.

A fourth group included 12 cases of face presentation (5 of them mentum posterior) 8 of brow presentation 8 of hydrocephalus 2 of breech presentation 2 of shoulder presentation 2 of ovarian tumor obstructing labor and 1 case of locked twins.

Shock was found not an infrequent complication and in some of the cases influenced the treatment.

Of the women in the first group 78 were delivered spontaneously or by low forceps showing that further moulding of the head had overcome the disproportion. 15 were delivered by high forceps 8 by version 98 by craniotomy and 12 by cesarean section. Pubiotomy was not done in any case. There were 29 maternal deaths and 154 fetal deaths. The causes of the maternal deaths were puerperal sepsis in 21 cases postpartum shock in 3 cases postpartum hemorrhage in 2 cases shock and collapse associated with rupture of the uterus in 2 cases and pneumonia in 1 case.

Of the women with an occiput posterior position of the fetal head a large number were delivered by forceps after manual rotation to anterior. 15 were delivered spontaneously 93 by forceps 11 by version 37 by craniotomy and 3 by cesarean section. There were 116 maternal deaths and 100 fetal deaths. The death of the mother was due to sepsis in 11 cases rupture of the uterus in 4 cases and pneumonia in 1 case.

In the majority of the cases in the third group morphine was given or twilight sleep was induced and the labor allowed to continue until delivery was effected spontaneously or by low forceps. Forty-seven of the women were delivered spontaneously 75 by forceps 9 by version 18 by craniotomy and 2 by cesarean section. There were 9 maternal and 78 fetal deaths. The death of the mother was

due to sepsis in 5 cases rupture of the uterus in 2 cases postpartum shock in 1 case and pneumonia in 1 case.

Miller states that many of these disasters could have been prevented by recognition of the abnormal pelvic contraction or over size of the child before delivery. They show the danger of applying the forceps on the floating head and without accurate knowledge of the position of the head.

Hendry in discussing how far the unsuccessful application of forceps can be prevented by efficient antenatal care emphasizes that careful external and internal pelvic measurements should be made and skeletal deformities noted. Internal examination is essential. Besides measuring the diagonal conjugate the obstetrician should palpate the pelvic brim all around. Fibroids or ovarian cysts which might obstruct labor should be detected. A pendulous abdomen in the case of a primigravida should always arouse suspicion. In primigravida the head should descend into the pelvis during the last month. Its failure to descend is very often due to contracted pelvis but in some cases the cause may be a faulty presentation neoplasm or placenta prævia.

In doubtful cases at term the best pelvimeter of all—the fetal head—is available. Hendry recommends the modification of Müller's method so long advocated by Munro Kerr.

Hendry calls attention to the fact that there is an essential difference in the prognosis of labor in a generally contracted and in a flat rachitic pelvis. In the flat rachitic pelvis there is usually enough space in the lateral bays on each side of the promontory for the head to engage transversely and make its way through the brim by descent of the occiput through one of the bays. In a generally contracted pelvis however the total area of the brim is small and the head can pass through only in extreme flexion. The extreme flexion makes traction with forceps difficult as only an insecure hold is obtained.

The history of difficult or instrumental deliveries in previous pregnancies should put the obstetrician on guard for a repetition.

Absolute measurement by the X-ray is not of great value except in extreme cases. The position of the head at the brim before the onset of labor does not give any indication as to how the head will mould or alter its position and relationship under the influence of uterine contractions.

In Hendry's borderline cases of contracted pelvis the patient is allowed a good long labor and a lower uterine segment cesarean section is done if progress is not satisfactory. To decrease the risk of infection examinations are made by rectum instead of by vagina.

Occiput posterior positions should be diagnosed without much difficulty. Some of them can be changed to anterior positions by the use of pads and binders. From 60 to 80 per cent rotate spontaneously. The important point is to recognize the association of this malposition with a protracted labor. Dilatation of the cervix is often slow. The

# OBSTETRICS

## PREGNANCY AND ITS COMPLICATIONS

Titus P and Dodd P. The Etiological Significance of Lowered Blood Sugar Values in the Vomiting of Pregnancy. *Am J Obst & Gynec* 1928 xvi 96

Titus and Dodds have studied a series of forty cases of hyperemesis gravidarum of moderately severe and very severe grade with special reference to the etiological significance of lowered blood sugar values in this condition. Their work was carefully checked by blood sugar determinations at the beginning and during the course of the treatment while the patients were in the hospital. An attempt was made also to follow up the patients after six months and one year.

From the successful results of their carbohydrate therapy the authors conclude that the chief factor in the toxæmia of pregnancy is a deficiency in carbohydrates. The sudden drop in the blood sugar in eclampsia and eclamptic seizures suggests that carbohydrate deficiency may be responsible also for these conditions.

In cases of hyperemesis the blood sugar readings in diastole are the lowest in the cases of women who are most profoundly affected by the toxæmia. In fulminating cases of hyperemesis with acute yellow atrophy of the liver convulsions occur early in pregnancy which are comparable to typical eclamptic seizures later in pregnancy.

The use of insulin without glucose in hyperemesis is dangerous. Careful laboratory control of the blood chemistry in these cases with special reference to the blood sugar is essential. The authors cite a case of pregnancy complicated by diabetic coma and a blood sugar reading of 230 mgm per 100 c cm of blood in which they believe death would have resulted if sugar had been administered.

F L CORNELL M D

Ivens F. Latent Sepsis in Pregnancy Toxæmia. *J Obst & Gynec Brit L 19* 1928 xxiv 30

Since the toxic manifestations of pregnancy are closely allied it seems logical to expect a common cause and a bacterial cause appears to be the most probable. If organisms are circulating in the body in these toxæmias it is to be expected that they will be excreted in the urine. In thirteen cases with albuminuria and œdema coliform organisms were found in the urine usually with pus in it sometimes with blood. In the urine of two women with pernicious vomiting of pregnancy motile bacilli were found. In a case of severe jaundice the urine contained pus cells colon bacilli and bile. In this case the colon bacillus infection had probably extended to the bile ducts. In the case of a patient with

hyperemesis and jaundice the urine contained albumin acetone bile leucocytes and a few coliform organisms but blood cultures were negative. Organisms were found in the urine also in four cases of accidental hæmorrhage. T FLOYD BELL, M D

Ferguson I K and Priestley J T. The Relation of Gall Bladder Disease to Pregnancy. *Am J Obst & Gynec* 1928 xvi 82

In an investigation of the relationship between gall bladder disease and pregnancy the authors found that of a series of 112 women with gall bladder disease 95 (84.8 per cent) had borne children and 30 of the latter stated that their first attack occurred during or shortly after their first pregnancy.

In cases of cholelithiasis the stones were composed largely of cholesterol only. This is an interesting observation inasmuch as pregnancy is frequently associated with a definite hypercholesterolemia which undoubtedly predisposes to the formation of gall stones. Because of this association of pregnancy hypercholesterolemia and gall stones the prophylactic treatment should be directed toward keeping the blood cholesterol at the lowest possible level during pregnancy. The cholesterol of the blood is dependent largely upon the diet. Therefore the use of cholesterol containing foods should be restricted. Among such foods are fats egg yolk fried foods sweetbreads liver kidney pork butter and cheese.

F L CORNELL, M D

## LABOR AND ITS COMPLICATIONS

Miller D. Unsuccessful Forceps Cases. Causation, Management and End Results. *Brit M J* 1928 i 183

Hendry J. How Far Can Unsuccessful Forceps Cases Be Prevented by Efficient Antenatal Care? *Brit M J* 1928 ii 185

Shaw W F. Unsuccessful Forceps Cases. The Need for a Higher Standard. *Brit M J* 1928 ii 188

MILLER discusses the reasons for the unsuccessful application of forceps in 558 cases—281 from Shaw's service in Manchester 125 from Hendry's service in Glasgow and 152 from the Edinburgh Royal Maternity Hospital.

In 211 cases the cause of the dystocia was disproportion. In the majority the disproportion was due to pelvic contraction and in a small number to abnormal size of the child. In 6 cases the cause was a contraction ring of the uterus. The pelvis were chiefly flat rachitic and generally contracted but in 14 cases there was a deformity of the pelvic outlet.

In more than one-half of the 211 cases the head was freely movable at the brim when the patient was admitted to the hospital. In many the disproportion

## MISCELLANEOUS

Nelson E E and Pattee G I. The Present Status of the Ergot Question with Particular Reference to the Preparations Used in Obstetrics and Gynecology. *Am J Obst & Gynec* 1928 xvi 73

The authors have made a study of the composition of ergot its active principles and the preparations offered on the market. They classify the active substances into two groups the alkaloids crystalline ergotamine and amorphous ergotamine (the latter known also as ergotoxine) and the amines principally histamine and tyramine.

Pharmacologically the crystalline ergotamine is a relatively inert substance as shown by its action on the isolated guinea pig uterus. The amorphous ergotamine or ergotoxine has a more marked effect as shown by the characteristic bluing and gangrene it causes in the cock's comb its stimulation of the excised uterus of the rat cat and guinea pig and its stimulation of the uterus of the cat rabbit and monkey *in situ*. Ergotamine while physically and chemically different from ergotoxine has a similar pharmacodynamic action.

Of the amines histamine and tyramine are the only two of any importance. They occur in the fresh crude drug and are usually present in the galenic preparations. The relative activity of these preparations is diametrically opposite. Tyramine produces a rise and histamine a fall in the blood pressure. On the excised uterus tyramine has less than one one hundredth the activity of histamine.

The authors conclusions regarding the activity and use of ergot and its principles are as follows:

All of these substances will stimulate the isolated uterus but the value of tyramine ergotoxine and histamine in obstetrics or gynecology is questionable. The alkaloid ergotamine is probably the most important constituent of ergot. Its presence is highly desirable in all ergot preparations and should be insured. Of the ergot preparations on the market

only the USP fluid extracts contain important amounts of the active alkaloids and only the official fluid extract or preparations definitely shown by proper methods of assay to contain these alkaloids should be used. E L CORVEY M D

Chappaz G. Comparative Serological Studies of the Blood of the Umbilical Cord and the Retroplacental Blood (*Études de sérologie comparative entre le sang du cordon et le sang rétro placentaire*) *Gynec et obst* 1928 xvii 283

In a series of observations extending over a period of two years Chappaz of the Rheims Maternity Hospital compared the usual serological reactions occurring in the blood of the cord and the retroplacental blood at the time of delivery. He found that in the blood of the cord the Hecht reaction is usually worthless. In 58 of 150 cases selected at random the results of the tests of the blood of the cord and the retroplacental blood were contradictory. In 53 of these 58 cases the reaction was positive in the retroplacental blood. In order to ascertain whether the retroplacental blood has special properties which made the positive reactions without significance blood taken from the arm of the mother at the elbow was also tested. The reactions of the latter agreed with those of the retroplacental blood but were a little less marked.

The author takes a sample of the retroplacental blood as a matter of routine whenever possible. When the reactions are negative the taking of numerous samples in the ordinary examination for the Wassermann test is thereby avoided. If the reactions are positive a sample is taken from the elbow and two results are obtained with the inconvenience of taking only one sample of blood. When the retroplacental blood is not obtained a sample is taken at the elbow if the slightest symptom has been apparent during pregnancy or labor. In the cases of women who are clearly syphilitic the reaction of the blood of the cord is often negative when the other reactions are positive. PAGE

position should always be diagnosed before the application of forceps.

Bony deformity of the pelvis and obliquity of the axis of the uterus may give rise to a face or brow presentation. The latter can often be treated by the use of a binder. Transverse and oblique presentations should be identified before the onset of labor and treated as necessary. A breech presentation should be diagnosed easily and hydrocephalus fairly easily.

The application of forceps before complete dilatation of the cervix is a most dangerous procedure. This should be strongly impressed upon the medical student.

A midwife should not be allowed to care for a pregnant woman unless provision has been made for a careful examination of the patient by a physician before labor is due.

SWAN reviews cases in which a large number of craniotomies were performed. He states that a large number of the babies could have been saved by cesarean section but the risk to the mother would have been much greater. In 3 or 4 cases collected in 1921 from the British Isles by Holland the mortality from cesarean section was 1.6 per cent when the operation was done before the onset of labor and 36 per cent after attempts at forceps delivery. In Shaw's opinion there is probably less risk in a lower uterine segment cesarean section with delivery of the placenta and cord through the cervix and vagina after closure of the uterine incision as advocated by Munro Kerr.

Shaw states that poor obstetrical results are probably due to apathy and the lack of sufficient obstetrical instruction in schools. Both the medical profession and the laity fail to realize the risks of labor and the fact that special knowledge is necessary for the skillful treatment of abnormal cases.

In the opinion of the laity labor is a normal natural function. If it ends successfully it is no credit to the doctor or the nurse but if anything goes wrong the attendants must be to blame. A practical outcome of this belief is that very small remuneration is paid for attendance upon a maternity case. The physician is expected to be able to handle any abnormality. If he realizes that the situation requires someone more experienced he feels that this means a loss of his prestige in the eyes of the patient and that he will be blamed for the extra expense. Until the public realizes the skill, time, and patience required in every maternity case and is willing to pay commensurate fees so long will the temptation remain to hasten delivery by every available means.

Students should see and attend a greater number of cases than they are now required to attend and should be obliged to spend more time in maternity wards.

Careful antenatal observation is very important as is also antipspis. The obstetrician must not be influenced by the patient's relatives. He must be patient and realize that the cervix may be very slow in dilating completely. The application of forceps

with the head at the brim should be a rare procedure since cesarean section is preferable. The position of the head should be diagnosed definitely before forceps are applied. PHILIP H. ARMOR, M.D.

NATHANSON J. N. *Anatomy, Genesis and Clinical Considerations of Placenta Accreta*. 1st ed. Obst. & Gynec. 1923. xvi, 44.

Nathanson discusses the etiology, anatomy, pathology, and clinical aspects of placenta accreta and reports a case in detail. He states that in a review he made of the histories of 15,000 patients admitted to 3 large obstetrical hospitals to determine the frequency of the condition he found only 4 cases.

The microscopic anatomical examination reveals a definite lack of the spongy layer of the decidua basalis which accounts for the difficulty in the separation of the placenta from its normal site of implantation. It is possible that any procedure which leads to atrophy of the endometrium such as previous manual removal of the placenta or curettage may be a predisposing factor in the development of placenta accreta. It is probable that the condition may result also from improper development or a pathological change in the corpus luteum which is known to control the development of the decidua.

Unless previous manipulations have been made to produce partial detachment the condition is recognized by failure of separation of the placenta and absence of bleeding. The diagnosis is corroborated by exploration of the uterus and failure to find a line of cleavage between the placenta and the uterus. The only rational treatment is hysterectomy as this offers the best chance for recovery and prevents the serious complications of hemorrhage and sepsis which so commonly occur when removal from below is attempted. F. L. CORNELL, M.D.

#### PUERPERIUM AND ITS COMPLICATIONS

SHERMAN W. O'N. *Uterine Sterilization*. 5th ed. Gynec. & Obst. 1923. xlvii, 175.

In the treatment of uterine infection following delivery or abortion the author uses Dakin's solution. This solution is introduced into the uterine cavity under just sufficient force to keep it from entering the fallopian tubes. From 4 to 8 oz. are allowed to flow in every hour.

Sherman reviews 285 cases treated by this method with 26 deaths. The duration of the treatment averages three or four days. The effect of the treatment is noted in the progressive diminution in the bacteria in the lochia.

Because of the special apparatus necessary it is advisable that the treatment be carried out only in well equipped hospitals and by skilled operators. The best results are obtained in the so-called "pure" puerperal septic endometritis of mixed bacterial origin with marked subinvolution of the uterus. When extension to the parametrium is suspected the method is contra-indicated.

MAGNUS P. URBES, M.D.

brought over and across it small bits of fat being placed under the sutures to keep them from cutting through the renal tissue. This stage of the resection is completed by capsular suture and nephropexy is then done.

Partial nephrotomy with dilatation of a constricted calyx or the removal of a stone from a calyx was practiced twice in each case with transrenal drainage of the pelvis and a successful result.

Elastic operations on the ureteropelvic juncture were performed for constriction in two cases. In one case a longitudinal incision of the constriction was followed by transverse suture. In the other the constricted area was resected and terminolateral anastomosis was done. Transrenal drainage and nephropexy were performed in each instance.

Temporary drainage of the pelvis by the transrenal route has been applied in the treatment of minor dilatations with infection resistant to ordinary methods of pelvic lavage. Nephropexy is performed with this procedure as in other operations. Papin has used this treatment in about fifty cases and has found it very successful.

Besides the procedures described Papin has found numerous combinations necessary depending upon the indications. These are (1) single nephropexy, (2) denervation and nephropexy, (3) section of a vessel and nephropexy, (4) pelvic drainage and nephropexy, (5) resection of the pelvis drainage and nephropexy, (6) resection of the pelvis drainage section of an abnormal vessel and nephropexy, (7) anastomosis drainage and nephropexy, (8) resection of the pelvis anastomosis drainage and nephropexy.

MARION in closing the report stated that he agreed with Papin that nephropexy is an important part of the treatment. He believes that in many of the cases reviewed in which the kidney was low simple suspension alone would have accomplished as good results as the more complicated procedures. He regards Papin's results from partial resection of the kidneys in cases of dilated calyx and dilatation of the constricted neck of a calyx as excellent. He rejects the neuromuscular theory of hydronephrosis believing that the condition is the result of obstruction by a calculus constriction tumor abnormal vessels or low position of the kidney.

MICHAEL L. MASON, M.D.

Andrén, G. Contribution on the Pyelographic Diagnosis of Renal Tuberculosis. *Acta radiol.* 1924 ix 189.

Andrén states that the characteristic feature of the pyelographic picture of relatively early renal tuberculosis is the presence of signs of infiltration of a calyx wall and of narrow fistulous tracts extending from this area. He reports two cases in which the diagnosis was made by pyelography after other methods of examination had failed to indicate the nature of the condition definitely and was verified by pathologico-anatomical examination after operation.

Dick, B. M. Staphylococcal Suppurative Nephritis (Carbuncle of the Kidney). *Brit J Surg* 1923 xvi 106.

The author adds three cases of carbuncle of the kidney to the twenty seven that have been reported in the literature and discusses the etiology, clinical features, diagnosis and treatment of the condition. He believes that carbuncle of the kidney may be diagnosed with considerable accuracy and is a distinct pathological and clinical entity.

JOHN G. CHILTHAM, M.D.

Gruber, C. M. The Peristaltic and Antiperistaltic Movement in Excised Ureters as Affected by Drugs. *J Urol* 1928 xx 27.

In experiments performed by the authors on excised long segments of the ureters of pigs spontaneous peristaltic and antiperistaltic contractions were observed. In some cases they occurred as long as one hundred and eight hours after excision of the ureter. Fluids placed in the lumen of the ureter were propelled from the kidney end toward the bladder end during peristalsis and in the reverse direction during antiperistalsis. The force of the ureteral contraction was dependent upon the rate of contraction. Stronger contractions were always noted after longer periods of rest.

The effect of temperature, the hydrogen ion concentration of the solution, epinephrin, urea, acetylcholine and nicotine were also determined.

JOHN P. O'NEIL, M.D.

Gibert, J. Cystic Dilatation of the Ureter Strangulated at the Urethral Meatus (Dilatation kystique de l'uretère étranglé au méat urétral). *J d'urolog med et chir* 1928 xvi 468.

The author reports a case of ureterocele on the left side which prolapsed into the urethral meatus. At first the sac emerged from the urethra intermitently but eventually it became strangulated and gave rise to urinary retention and gangrene. Before the prolapse there had been no vesical symptoms or attacks of lumbar pain such as are usually associated with the development of cystic dilatations of the lower end of the ureter.

As the orifice of the right ureter was abnormally small the author believes that the ureterocele on the left side was due to a similar but more marked malformation.

I ACC.

Hunner, G. L. Calculus of the Upper Urinary Tract Treated by New Methods. End Results. *J Urol* 1928 xx 61.

The author emphasizes the important causal relationship existing between ureteral stricture and the formation of calculi in the upper urinary tract. Clinical experience indicates that ureteral stones are usually formed in the inflammatory strictured area of the ureter and are not as was formerly believed kidney stones which have become lodged in the ureter secondarily.



# GENITO-URINARY SURGERY

## ADRENAL KIDNEY AND URETER

Davis J F The Surgical Pathology of Malformations in the Kidneys and Ureters *J Urol* 1928  
xx 1

Following a review of essential features in the functional and structural development of the urinary excretory processes from the lowest to the highest forms of life the author discusses the comparative anatomy of the kidneys of animals having mature nephritic and mesonephric development and the occurrence and etiology of renal malformations in animals and man. He reports a study of twenty cases of human congenital polycystic kidney in subjects ranging from a fetus of five months to a man sixty five years of age. (JMS: O'NEIL MD)

Chevassu M The Study of Hydronephroses by Uretrography (Le hydronephroses et leur étude au moyen d'urétérigraphie) *Bull et mém Soc u de ch* 1928 liv 900

Chevassu criticizes Papin's recommendation of surgery in all cases of hydronephrosis on the basis of the findings of ureterography. Chevassu believes that in mild and partial cases of hydronephrosis removal of the cause of the obstruction may cure the condition and that ureterography is not as yet far enough developed to justify operation in all cases on the basis of its results. In support of his opinion he calls attention to the fact that the variation of the caliber of the ureters in different persons may give rise to errors of interpretation. Moreover the injection may not distend the ureter completely the result suggesting the presence of narrowed and dilated zones when such zones are absent and in very sensitive patients it may overdistend the ureter and mask zones that are narrow. Even if a constricted zone is seen it may be normal or it may be due to a transitory contraction of the ureter or a more persistent contraction in the form of spasm. Spasm of the ureter is the condition most apt to be interpreted incorrectly. The persistence of a decrease in caliber at the same point indicates a true contraction but the patient often objects to repeated examinations.

The greatest defect in ureteropyelography is the difficulty in differentiating between permanent and temporary conditions. There is nothing to show that a dilatation of the pelvis or ureter seen at one examination is irremediable. Pyeloscopus has shown that in spite of considerable dilatation of the renal pelvis the kidney may function almost normally. Even if there is a certain degree of infection disinfection of the urine and catheterization of the ureter may greatly improve the condition if the dilatation is not too great.

In conclusion Chevassu urges that cases of hydronephrosis be studied carefully and systematically before operation is undertaken.

ALOREY G. MORAN MD

Papin F A Conservative Operations for Hydronephrosis (De quelques opérations conservatrices dans les hydronephroses) *Bull et mém Soc u de ch* 1928 liv 500

Papin reports a series of cases of hydronephrosis which were treated by conservative operation and MARION who read a paper before the Society discusses the etiology of the condition.

Papin's cases were all congenital hydronephrosis. In the treatment the attempt was made to save as much functioning renal tissue as possible depending upon pyelography to determine the extent of the condition. Papin completed every operation with a nephropexy which he considers an important step in the procedure. He performs nephropexy according to his own technique. The superior pole of the kidney is transferred from a 2 to 3 cm. below the apex with two long catgut sutures tied on either side over bits of fat taken from the subcutaneous tissues. These sutures are then passed at a distance of about an inch from each other through the intercostal space above the eleventh rib and tied. The fatty capsule is then sutured to the twelfth rib forming what Papin calls an infrarenal hammock.

Partial resection of the pelvis of the kidney was done in seven cases and was successful in all. In one however nephrectomy became necessary later possibly because of failure of the nephropexy to hold. Partial resection of the renal pelvis is applied to dilatation of the pelvis without obstruction. An area from the medial lateral or anterior surface of the pelvis is resected and the pelvis resutured. Drainage is established transversely by passing a curved trocar through the renal parenchyma and drawing a small drain through the opening thus made into the pelvis. The drain is left in place for about fifteen days lavage of the kidney being at times carried out through it.

Papin recommends partial resection of the kidney which was performed successfully in two cases for cases with dilatation limited to a large calyx and believes it is the only treatment for such cases. The extent and character of the dilatation having been determined by pyelography, Papin incises the kidney (superior pole) transversely so as to cut across the dilated calyx into which the index finger into the dilated calyx temporarily compresses the renal pedicle by a rubber sound and performs an inverted conical resection of the parenchyma surrounding the dilated calyx. The calyx is then sutured with No. 00 catgut and the parenchyma

brought over and across it small bits of fat being placed under the sutures to keep them from cutting through the renal tissue. This stage of the resection is completed by capsular suture and nephropexy is then done.

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JOHN I. QUINN, M.D.

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Clinical experience has suggested also that a calculus in the kidney may be a ureteral stone formed in a structured area which has migrated into the kidney as the result of dilatation of the ureteral channel above the stricture.

However most renal calculi undoubtedly originate in the kidney and in all probability their formation is due largely to the urinary stasis caused by ureteral stricture.

It is emphasized that the presence of ureteral stricture and the consequent urinary stasis are not the only factors necessary for the formation of stones in the upper urinary tract if they were such stones would be far more numerous. Rosenow and Meisser have been able repeatedly to cause the formation of renal calculi in dogs by producing a focus of infection at the root of a devitalized tooth by inoculating streptococci grown from the urine of patients with multiple recurrent calculi. Keyser was able to produce calculi in the kidneys of rabbits by feeding experiments.

The author urges that as their contribution to the solution of the problem clinicians make careful observations of every patient with urinary calculus with regard to the possible effect of climate, diet, metabolism, infection and other factors supposed to influence the formation of calculi.

He states that most patients with calculus in the upper urinary tract are subject to some form of urinary stasis and the most frequent cause of the stasis is ureteral stricture.

Structure can be demonstrated not only on the side of the calculus but also on the other side. The symptoms and many of the pathological changes which were formerly ascribed to the presence of a stone are probably due more often to stasis caused by one or more strictures.

In dealing with calculus in the upper urinary tract our chief concern is the establishment of adequate renal drainage. The advantages of such drainage may be summarized as follows:

1. Thorough ureteral dilatation leads to the spontaneous passage of a large percentage of ureteral stones.

2. The use of the various ureteral stone extractors is facilitated and made less dangerous.

3. The total kidney function is increased and the general health is improved.

4. In some cases the patient is changed from a poor operative risk to a good one.

5. In many cases in which operation is contra-indicated on account of advanced age, obesity, cardiac or lung lesions or other conditions the patient is made more comfortable and his life is prolonged.

6. Operation may be deferred for months if necessary to meet the convenience of the patient.

7. If the working capacity of one kidney seems to be zero at the time of the first examination the dilatations may be kept up for at least a month to determine whether this kidney can be made to resume effective function. This is of great value in

deciding before the operation whether a radical or a conservative procedure is best.

8. Prolonged postoperative sinus drainage is avoided and a much higher percentage of the patients leave the hospital without urinary infection.

9. The tendency toward the recurrence of calculus in the kidney operated upon and toward the formation of a calculus on the opposite side is decreased. C. RUTHERFORD O. CROWLEY, M.D.

Foley F. F. H.: Uretero-Ureterostomy as Applied to Obstructions of the Duplicated Upper Urinary Tract. *J. Urol.*, 1913, 21, 109.

The author reports a case of obstruction at the lower end of the ureter due to a calculus in which he performed a uretero-ureterostomy similar to an entero-ureterostomy. He states that even when the obstructed half of a duplicated kidney is badly damaged by hydronephrosis, uretero-ureterostomy is free from the dangers of heminephrectomy and is to be preferred to heminephrectomy if there is no serious objection to leaving the hydronephrotic half of the kidney. It is especially indicated when the opposite kidney is absent or seriously impaired.

End-to-end anastomosis with resection of the segment of ureter between the anastomosis and the point of bifurcation may be done or side-to-side anastomosis without resection of the ureter as in the case reported. Under certain circumstances anastomosis of the two pelves rather than of the ureters might be more effective.

J. SIDNEY RITZER, M.D.

Kidd F.: The Stump of the Ureter After Nephrectomy. The Indications for Primary Nephro-Ureterectomy. *Bull. J. Surg.*, 1913, 21, 12.

Kidd states that before a nephrectomy is undertaken the condition of the ureter should be determined as in some cases the removal of the majority portion of the ureter in addition to the kidney will be found to give very much better after results than nephrectomy alone. In the past when silk was used for ligating the ureter symptoms of renal colic, fever and strangury sometimes occurred during convalescence and later a stone occasionally formed around the silk ligature. Subsequently the tone and the ligature were passed or a second operation was necessary for their removal. Even when silk was superseded by catgut the same postoperative complications arose. Such attacks were relieved by the passage of a quantity of pus in which portions of the catgut were often present.

The contents of an infected ureteral stump may discharge themselves periodically with attacks of fever, colic and strangury or may leak into the surrounding tissues and set up a mass of dense, fatty tissue containing loculated masses of pus and even urine causing severe symptoms unless a secondary nephrectomy which may be a very formidable undertaking is carried out.

The more common indications for primary nephro-ureterectomy are (1) hydronephrosis sim-

ple or infected in which the stricture is low down in the pelvic ureter (2) pyonephrosis or atrophic hollowed septic or aseptic kidney secondary to a stone long impacted in the pelvic ureter and (3) tuberculous pyonephrosis associated with an inflammatory stricture in the pelvic ureter

Rare indications are (1) papilloma of the renal pelvis with secondary deposits in the ureter (2) primary carcinoma of the ureter (3) congenital opening of the ureter into the wall of the vagina associated with congenital cystic or atrophic kidney (4) ectopic pelvic kidney (5) heminephrectomy for horseshoe kidney associated with infected stone and (6) primary fibrofatty ureteritis in which infection has extensively damaged the wall of the ureter but has left the kidney comparatively free

In the technique used by the author the kidney is exposed first and is freed with the lumbar ureter. The kidney pedicle is divided in the usual manner and the ureter is clamped as low as possible and divided with the cautery or with the kidney still attached is left suspended from the lower end of the wound. The wound is then stitched up and drained and the patient is turned on his back. In the easier types of cases the ureter is found through the author's muscle splitting operation. In the more difficult cases with obstruction in the ureter as low down as the bladder wall the ureter is approached by a midline or paracental incision with the rectus muscle drawn outward GILBERT J. THOMAS M.D.

## BLADDER URETERA AND PENIS

Feldman L. Muciparous Glands in the Mucosa of the Urinary Bladder *J Urol* 1923 xx 211

Edelman reports two cases in which operation was performed for the relief of frequency dysuria and hematuria and prior to the operation an accurate diagnosis had not been made. In the first case all of the routine urinary tests were negative but cystoscopic examination showed a polypoid oedema behind the trigone which extended laterally. This hypertrophied tissue bled very readily.

In the second case in which a diagnosis of carcinoma grafted upon an old syphilitic lesion was made microscopic examination showed the bladder wall to contain a glandular structure which under normal circumstances does not belong to any part of the bladder structures.

According to Gray there are no true glands in the mucous membrane of the bladder. In Persol's opinion the glands under discussion represent abortive prostatic tubules which were displaced during development.

Stoeck and Zukerkandl have reported three cases in which microscopic examination showed the development of intestine like mucous glands in the bladder wall.

It has been suggested that adenomata of the bladder have their origin in the embryonal rests from which such glands develop. According to an other theory the condition is a proliferation and

metaplasia of the surface and not a true gland formation.

As the symptoms are not characteristic the diagnosis can be made only by microscopic examination of the removed tissue.

The treatment is either excision or destruction with the cautery. ELMER HESS M.D.

Worson A.C. Observations on the Radium Treatment of Vesical Carcinoma *Proc Roy Soc Med Lond* 1928 xxi 1655

After fifteen years experience with radium the author concludes that the most important advance in our knowledge of the changes in cells both normal and malignant was Cantani's observation that fibroblasts are not destroyed by comparatively large doses of radium and that fibrous tissue is the protective reaction of the body in its resistance to malignancy. Drew demonstrated that fibroblasts inhibit the growth of malignant tumors outside the body.

The author's technique for the treatment of vesical carcinoma is based on the observation that fibroblasts restrain cancer cells and that they resist radium seeming even at times to be stimulated by it.

Before the treatment is begun the relation of the tumor to such structures as the ureter rectum and large vessels must be noted. In the application of the radium care must be taken to prevent constriction of the ureter from fibrosis resulting from the irradiation and it must be borne in mind that radiation in close proximity to vessels may result in thrombosis. Transurethral access to the tumor requires the services of an expert cystoscopist. The exact extent and character of a bladder tumor are difficult to ascertain through the cystoscope especially in the presence of hæmorrhage or severe infection. Cystoscopic application of the radium is often possible however and is of advantage as it does not require anaesthesia or cystostomy.

Careful observation of a bladder tumor is possible only by suprapubic cystostomy. The technique is described in detail. The tumor is exposed so that a visual and digital examination can be readily made through the suprapubic incision. Bimanual examination with one hand in the bladder and the other between the external bladder wall and the bony pelvis reveals the exact extent of the tumor and its relation to the ureter blood vessels of size and nerves.

Papillomatous tumors are treated by transfixing the pedicle with 0.5 mm platinum applicators with a sufficient dosage to insure complete destruction of the cells. The amount depends upon the size of the tumor. The duration of exposure is twenty four hours. Silk worm gut attached to the radium protrudes through the sutured bladder and abdominal incisions and is used to withdraw the radium at the end of the exposure. In ulcerative types of lesions radium applicators are inserted into the bladder wall around the periphery of the ulcer and sufficiently close together to insure lethal irradiation to every malignant cell. Radium is buried also in the external

bladder wall with strings attached for its withdrawal through the same incision.

On the basis of experiments carried out by Cope and the author injected a bladder tumor with a per cent fluorescein before irradiating, hoping for increased action since fluorescein gives off secondary rays under the influence of radium rays. The result was encouraging.

Sepsis must be eradicated before irradiation and guarded against during the reaction. After the irradiation hemorrhage is stopped within a few hours. The immediate local and general results are encouraging. The remote results vary with the size and nature of the tumor and the efficiency of the technique. In large tumors there is considerable central sloughing after three months. Better results are obtained with larger amounts of radium for twenty-four hours than with smaller amounts for many days. Case histories are reported in detail.

The author concludes that while vesical carcinoma cannot be cured by radiation alone shrinkage even to apparent disappearance can be brought about and hemorrhage can be controlled by such treatment.

In the discussion of this report THOMSON WALKER stated that fibroblasts also are destroyed when the dosage is sufficient. He cited favorable and unfavorable experiences with radium. He believes that the use of radium in the treatment of bladder tumors should not be restricted to cases in which other measures have failed. In cases of operable tumors however radium irradiation is not advisable as it renders operation difficult.

NITCU stated that he prefers the use of smaller amounts of radium over a period of from five to fourteen days to the administration of the same dosage in a few hours.

KIDD described the implantation of glass or platinum-walled radon seeds for long continued irradiation. He stated that 2.5 mc in platinum seeds of 0.3 mm thickness should not be placed in the bladder in greater numbers than eight or ten at a time. Sloughing and sepsis are less frequent if divided implantations are made. Kidd reported twenty-three cases of bladder tumor treated with radon implantation after electrocoagulation. He stated that in malignant disease of the bladder partial cystectomy is the method of choice. But he urged careful use and observation of radium.

MORSON in concluding the discussion repeated that in his opinion fibroblasts are the most resistant of all cells to irradiation. He believes that before long he will use radium in operable cases. He emphasized that large doses for a short time are less devitalizing to normal structures than small amounts for a long time. He prefers radium salt to emanation implants.

JAMES LARKIN M.D.

Mouat T. B. Urethral Diverticula. *Br J Surg* 1928 xvi 51.

After presenting a classification of urethral diverticula the author describes several cases re-

ported in the literature to illustrate the various types. He reports two cases of his own in detail and discusses the etiology, diagnosis and treatment of the condition.

JOHN C. CHURCHMAN M.D.

Kidd F. Milligan E. T. G. Ward R. O. Ward F. and Others. Discussion on the Treatment of Urethral Stricture and Fistulae by Excision. *Proc Roy Soc Med Lond* 1928 xxi 1635.

KIDD states that operations for urethral stricture are of two types: (1) partial excision, a strip of mucosa being left on the roof of the canal (Albarran) and (2) excision of a large portion of the urethral canal including the roof followed by anastomosis of the cut ends (MacGowan and Russell). The advantages of the latter are that it does not interfere with the blood supply of the urethra or the power of erection and prevents recurrence of the stricture.

Russell does not open the bladder but exposes the deep urethra behind the structure by the Young procedure for perineal prostatectomy. MacGowan advocates a preliminary suprapubic cystostomy two weeks before the operation and pre-operative injection of the urethra with methylene blue to map out the track of the structure.

The steps of the operation are as follows:

1. An inverted Y incision is made in the perineum.
2. The musculature of the perineum is exposed forward as far as the testicles or farther if necessary and backward sufficiently far to expose the central perineal tendon.
3. The central tendon of the perineum is stretched with Young's retractor and divided close to the bulb. The central tendon of the bulbocavernosus muscle is split and pushed aside from the corpus spongiosum and if necessary the transverse perineal muscles are cut. Russell also cuts the recto-urethral muscle to expose the membranous urethra.
4. A wheelhouse stall is passed to the structure and the urethra opened freely in front of this and held aside by sutures.
5. A retrograde bougie is passed from the bladder the deep urethra is opened upon it behind the structure and the urethra is held aside by sutures. In Russell's operation the deep urethra exposed as in perineal prostatectomy is opened behind the structure.
6. The tunnel of the structure is then followed up and split on its lower surface from the healthy urethra behind to the healthy urethra in front.
7. The structured portion of the urethra is then cut away altogether in contrast to the partial operation in which a strip of mucosa is left on the roof of the urethra.
8. Russell then mobilizes the urethral stumps, makes flat ribbons of the urethra in front and behind, sutures these ribbons together to form a new roof for the urethra, fixes a perineal catheter into the bladder and leaves the floor of the urethra and the front of the wound open. MacGowan passes a

catheter from the meatus and sutures it into the deep urethra splits the mucosa of the two portions of the urethra into three ribbons and sutures these ribbons up completely around the catheter. He then closes the perineal muscles around the urethra and catheter leaving a small space for drainage and leaving the suprapubic tube in the bladder for two weeks. The urethral catheter is left in place for ten days and at the end of two or three weeks an 18 to 20 F sound is passed gently once a week.

Kidd has employed excision of stricture only for certain types of cases (1) those with a hard tunnel stricture which is palpable in the perineum from outside and does not respond to dilatation and (2) those with perineal fistulae through which pus and urine escape.

For old strictures and perineal fistulae Kidd has abandoned external urethrotomy and has developed a technique of his own. At the beginning of the operation suprapubic cystotomy is invariably done. This allows for the passage of a retrograde bougie. After its introduction the bougie is held in place and the patient is put in the lithotomy position. Through an inverted  $\lambda$  incision the perineum is then exposed and all fistulae and fibrous tissue are freely excised. A good result can be obtained only by cutting out all tracks and their surrounding thick fibrous tissue walls freely and boldly paying no regard to the superficial tissues and taking care only not to cut the compressor urethra muscle. In the next step of the operation the perineal muscles are defined as clearly as possible and after division of the central perineal tendon with preservation of the recto urethralis muscles the bulbocavernosus tendon is divided the corpus spongiosum surrounding the urethra being thereby exposed in front of the stricture and the urethra is opened on a Wheelhouse staff. A retrograde sound passed from the bladder renders section of the posterior group of perineal muscles unnecessary. The stricture always seems to lie in front of the triangular ligament and can be cut out from before backward as far as the retrograde sound which bulges forward at the anterior layer of the triangular ligament. The distal portion of the urethra is then mobilized and the two ends of the urethra are united by a double crossstitch with a good bite in the tissues outside the urethra. The lateral walls and floor of the urethra are reconstructed around a sound passed from the meatus and the perineal muscle is stitched together again. The sound is then removed and the superficial tissues are united partially around a gauze pick. The suprapubic tube is left in the bladder for two weeks. From seven to ten days later a metal bougie of moderate caliber is dropped into the bladder. The wounds may leak for a while but complete healing usually results in three or four weeks. After healing has occurred sounds are passed for a while.

In Kidd's opinion excision of the stricture combined with complete excision of the fistulous tracks should be done more frequently instead of external urethrotomy in cases of perineal fistula with stric-

ture tunnel stricture in the bulbous urethra persistent tunnel stricture after rupture of the urethra and possibly also tunnel strictures in the penile urethra. These strictures usually prove very resistant to internal urethrotomy and dilatation. Kidd believes that better results are obtained by suprapubic cystotomy and bold excision of such strictures. Without suprapubic cystotomy there is danger of leaving a penile fistula. For cases of ruptured urethra Kidd advocates suprapubic drainage followed by perineal exposure the use of a retrograde bougie to identify the proximal end and suture of the roof only of the cut ends the perineal wound being left freely open without the introduction of an indwelling catheter. He gives 1 gr of thyroid extract by mouth every night for many weeks to soften the fibrous tissue of a stricture so that it will be more amenable to dilatation.

MILLIGAN emphasizes the fact that the inflammatory process responsible for a urethral stricture is almost entirely confined to the roof of the canal. Most of the urethral glands and depressions infected in gonorrhoea are situated in the roof of the anterior urethra and the resulting inflammatory nodules are visible on the roof of the air distended urethra occasionally at the sides and very rarely on the floor. Usually these nodules disappear under proper treatment but occasionally they are followed by fibrous tissue formation leading to stricture. First a signet ring and then a lunule or crescent of fibrous tissue appears which usually involves the roof but sometimes either or both sides and the roof. This stage is detectable by urethroscopy. No case of gonorrhoea should be allowed to pass beyond it. A stricture in this stage which Milligan designates as Type 1 is easily and successfully treated by dilatation with sound and dilators. Such a stricture becomes white toward its central lumen and appears entirely avascular being thus distinguishable from normal urethral folds. At its peripheral margin it appears to be confined to the mucosa. As the condition progresses the stricture loses its pearly white color and translucent edges and becomes vascularized and a light pinkish white. The free central sharp edges are then more rounded thick and irregular and the structured area is more fixed on the subjacent tissue indicating deeper penetration. At this time the floor also is involved so that on distention with air the lumen is usually excentric toward the floor. The author calls strictures at this stage Type 2.

With regard to the pathogenesis of urethral stricture Milligan states that the normal position of the urethra is closed and the urethral walls are in the closed position most of the day and as a rule throughout the night. Inflammatory products out-poured plasma and cells render the tissue inelastic and when fibrous tissue is formed as the result of inflammation the normal force of micturition has little dilating effect.

In cases of Type 1 dilatation is satisfactory full dilatation can be established. It breaks the avas-

cular curtain usually in the roof and as a rule with out causing hemorrhage. In more advanced cases only the dorsal part disappears leaving an in conspicuous small raw area of healthy tissue. If no dilatation is practiced for a week the stricture reforms. This can be prevented by an indwelling catheter. Most strictures are of this type.

In cases of Type 2 ranging from advanced stages of fibrous stricture to the stricture with fibrous tissue penetrating to the perineum the selection of the proper type of operation is difficult. In all strictures except those with perineal fistulae and fibrous induration dilatation should be tried and the results gauged by the maintenance of full dilatation as observed by the urethroscope. If dilatation fails internal urethrotomy should be practiced. This is usually successful because the cut is made in the roof of the urethra. The cut should penetrate past the fibrous tissue to healthy tissue and should be held open by an indwelling catheter for several days to prevent recurrence. If the cut cannot be made into healthy tissue in the roof a subsequent cut should be made more laterally. However excision of the stricture is perhaps a better treatment for recurrences.

Internal urethrotomy is a most satisfactory operation because it is easy to perform causes little discomfort is followed by quick convalescence and in selected cases gives excellent results. It is applicable to multiple or angle strictures in the penile urethra but until we are able to select and classify strictures according to the depth of penetration of the fibrous tissue it will be followed in a few cases by recurrence—cases more suited for primary excision of the stricture.

The cause of failure of external urethrotomy is failure to incise the roof of the urethra. In external urethrotomy the procedure should be the same as in internal urethrotomy. Milligan believes however that excision of the stricture is better than external urethrotomy. In cases of Type 1 this is quite easy. The Russell technique is recommended. Excision removes all stricture tissue and local diseased follicles which the other methods fail to do. It holds the urethral walls apart immediately after operation until they are set in this position by outpoured lymph and by scar tissue. As recurrences are due to subsequent detachment of the urethra the passage of a full sized sound at yearly intervals is advisable. In cases in which Milligan has excised 1 or 2 in. of the urethra he has found that it caused marked shortening of the penis. In cases of multiple strictures he excises the most extensive stricture in the perineum and does an internal urethrotomy for penile strictures.

Milligan recommends excision of the stricture for all cases not easily managed by dilatation and internal urethrotomy. He states that if it were possible to estimate the depth of the penetration of the fibrous tissue in the urethra and the depth of the incision with the urethrotome the selection of cases for suitable operation would be easier. At present

this can be guessed at from the appearance of the stricture through the urethroscope. All cases of perineal fistulae with fibrous induration associated with stricture are suitable for excision. In such cases other methods are unwise. All fibrous tissue wherever seen, should be excised, all tracks should be followed even to the inguinal regions and lower abdomen and all fibrous tissue should be cut from the urethra. All wounds should be surrounded by healthy tissue. As long as shreds of the urethra can be sewed together in the roof without tenon the perineal floor is not important. The author had excellent results from this technique.

R O WARD states that he does not use the retractor. After exposure of the corpus spongiosum the stricture is easily felt. Ward works away from the diseased part going well forward to lodge the whole corpus spongiosum from its bed. After a little dissection with curved Mayo scissors the finger can be passed around it. Thus the whole circumference of the urethra is cleared in front of the stricture. In dealing with a fistula the bladder should be opened first. With a steel bougie from the bladder in position the urethra behind the stricture is usually brought into view if not careful dissection is necessary to expose it. Usually Ward finds the dilated part opens it and excises the strictured part. If this is difficult the whole corpus spongiosum being mobile in front is cut across just anterior to the stricture the thickened part is cut away and the healthy urethra is found behind it. The torn ends are then sutured together. When the stricture is close to the triangular ligament it is difficult to get the catheter to be so that it does not touch the suture line. A stricture located half an inch in front of the triangular ligament is easily operated on but in strictures very close to the triangular ligament operation is difficult. Only the mucous membrane should be sutured. The whole thickness of the corpus spongiosum should be included in the sutures to prevent them from cutting out. Dilatation and internal urethrotomy are good methods of treatment but when a guide cannot be passed excision of the stricture or external urethrotomy is necessary. In Ward's opinion the latter is not very useful and is to be regarded as an operation of emergency. For retention cystotomy is necessary. When a guide cannot be passed excision of the stricture is advisable.

F WARD states that if the urethroscope shows a diaphragm stricture which does not respond to three or four dilatations external urethrotomy is indicated. Internal urethrotomy may result in the cutting of an important artery with hemorrhage which can be stopped only by extirpation of the penis. In the presence of various severe strictures Ward cuts down upon urethra. The passage of a guide helps the operation considerably. If a filiform bougie cannot be passed into the bladder retrograde catheterization through the bladder is done. Ward prefers a metal catheter as it indicates where the urethra should be. After the catheterization

Ward cuts through the stricture and does whatever seems indicated. He has found that a silver catheter can be left in for a week without causing sepsis. When the passage of a silver catheter is prevented by a large amount of fibrous tissue, complete excision is the only course, especially if sinuses lead from the pubes or the perineum. The bleeding is not very severe.

In a case of extravasation of urine after a severe injury, adhesions to the perineum resulted and the perineum gave way after each attempt at dilatation. Ward performed a plastic operation, turning a flap over from one side to the other. Healing was very satisfactory, but the urethroscope revealed hairs soon after the operation and four years later difficulty was again experienced in passing a bougie. Ward therefore performed another external urethrotomy and destroyed the hairs with the cautery. The patient has now a perfect urethra formed of external skin and is in good health.

Two cases of stricture of the anterior urethra are cited in which the stricture was 3 in. in length extending to the penoscrotal juncture. In the first case that of a man seventy years of age, retention occurred suddenly and only a filiform bougie could be passed. Suprapubic cystotomy was done and later an artificial meatus was made in the perineum. As only a filiform bougie could pass from this meatus to the end of the penis, a modified Duplay operation was done. The whole anterior urethra was reconstructed from a longitudinal flap of skin.

In the other case there was a fistula in the penoscrotal area and the procedure tried in the first case resulted in sloughing of the whole penis because of disregard of Young's statement that plastic operations should not be done on the anterior urethra unless there is drainage from the bladder or the perineal wound.

Ward is not convinced of the congenital origin of strictures of the anterior urethra. For stricture of the meatus which sometimes is associated with fibrosis of the penis and atrophy of the corpus spongiosum, he recommends opening of the bladder or the formation of an artificial meatus in the perineum.

WRIGHT states that dilatation with filiform bougies and internal urethrotomy have several disadvantages. He has observed extravasation after the operation even when the catheter was retained. The posterior urethra may be difficult to find but Wright relies on the observation that behind the stricture the urethra is always dilated. He cuts down on a Wheelhouse staff, defines the surface of the stricture, and then slices the urethra transversely until he reaches the dilated portion. Mobilization of the urethra is a very important part of the operation. After excision it is important to secure approximation of the edges around a catheter passed into the bladder because a gap in the floor of the urethra favors fibrous tissue formation. Wright believes that in the ordinary case suprapubic drainage has no advantages over perineal drainage. When it

is possible without going behind the triangular ligament, Wright makes a small incision  $\frac{1}{2}$  in. behind the sutured urethra over a catheter passed into the bladder and through this incision passes another catheter for drainage. This method gives results as good as those of suprapubic drainage. Wright believes that an instrument should be passed as far as the retained catheter as early as the fifth day after the operation. This will prevent adhesions between the floor and the roof of the urethra. When the retained catheter is removed a large sound can be easily dropped into the bladder. For suturing the urethra, Wright recommends figure of eight sutures with fairly large bites of the spongy tissues.

In one case cited, partial incontinence resulted from interference with the sphincter.

BERTWISTLE reports some perfect cures from operation and also some recurrences, the latter worse than the first stricture and probably due to insufficient excision of the diseased tissue.

MORSON states that excision is indicated particularly when the stricture is due to trauma. In gonorrhoea measures to prevent stricture formation are most important. Morson believes that many severe strictures of the urethra are the result of maltreatment by physicians.

WHIRE states that in his opinion the internal operation is far superior to external urethrotomy. The worst strictures he has had to dilate were those following external urethrotomy. Occasionally he has seen strictures which would not admit even a filiform bougie. However, there are very few strictures which cannot be negotiated with such a bougie, especially one of the corkscrew type if patience and the right kind of a guide are used. Urethroscopic studies show that strictures of the anterior urethra are not uncommon although they are not usually so far advanced as strictures in the bulb. In the average case of stricture of the bulb, a number of early lunules associated with follicles can be seen within 2.5 in. posterior to the navicular fossa. The stricture is really an extension of the inflammation at that spot. Internal urethrotomy gives successful results because all of the early strictures can be divided with the urethrotome and the follicles are also opened up.

HUBBY claims that the results of internal urethrotomy depend almost entirely upon the patient's willingness to return to the hospital at regular intervals for dilatation.

In summarizing, KIDD agrees that internal urethrotomy is of value but states that in his opinion external urethrotomy should be abandoned. He always excises fistulae completely and has found that cases in which this is done require less dilatation afterward. He uses a very small urethrotome knife to avoid deep cutting with severe bleeding. He believes it is best to make a small incision and then to stretch with large bougies. Excision is applicable to both perineal fistulae and difficult strictures. The essential steps in the operation brought out by the discussion are:



1 Division of the bulbospongiosus muscle in the midline to permit blunt exposure of the corpus spongiosum

2 Blunt dislocation of the corpus spongiosum containing the urethra in front of the stricture

3 Resection of the stricture backward from the urethra so freed and opened until the dilated urethra behind the stricture is opened up

4 Suture of the roof of the urethra

The question as to whether better results are obtained from preliminary suprapubic cystotomy with drainage or perineal drainage through the deep urethra is left open. LOUIS NEWMAN, M.D.

## GENITAL ORGANS

LeFur, R. Operative Treatment of Abscess of the Prostate (Traitement opératoire des abcès de la prostate) *Lancet* 1928 xi 36

Operative treatment is indicated for prostatic abscess only when the abscess is of a certain size or having opened into the urethra or the rectum can not be cured by ordinary measures such as massage of the prostate and progressive dilatation of the posterior urethra combined with copious urethrovaginal lavage. The persistence of fever in spite of the spontaneous opening of a prostatic abscess and especially the appearance of periprostatitis is an indication for surgical intervention.

The abscess may be opened surgically by (1) the rectal route (2) the hypogastric route (when the patient has undergone a prior cystostomy) or (3) the perineal route. The procedure of choice is perineal prostaticostomy.

In the technique used by the author the skin is incised two fingerbreadths anterior to the anus from one ischiatic tuberosity to the other. The incision is made slightly convex anteriorly in order to avoid the rectum as much as possible. The posterior surface of the urethra is then isolated because the deep incision is made immediately below it. The superficial and deep muscular raphe having been incised the prominence made by the urethral sound is followed to the posterior surface of the prostate. If both lobes are equally large and tense they are opened separately. The opening is made with a cannulated sound or a bistoury and enlarged with the finger the cavity of the abscess then being emptied very carefully and drainage established by means of a rubber tube.

Daily lavage is begun one or two days after the operation. The dressings are changed daily as long as the suppuration is abundant and when the suppuration decreases every two or three days. On the sixth or seventh day the rubber drain is replaced by a wick.

Vaccinotherapy is given by local application or subcutaneous injection. In case of oozing hemorrhage the abscess cavity is tamponed with wicks moistened with hemostyl. If the hemorrhage is arterial the artery is ligated. In cases with a urinary fistula the wound is kept open. If the fistula does

not close as the wound heals it is sutured. When the fever and poor general condition persist a further prostatic or periprostatic focus is sought and tests for a blood infection are made. If there are purulent fistulae of the ischio-rectal fossae the obturator or the retropubic region an incision at the focus is made. PAGE

## MISCELLANEOUS

Elsendrath, D. N. Anuria. *Minnesota Med* 1928 ii 440

Elsendrath divides cases of anuria into those of the obstructive type, those of secretory anuria and those of transition or combination anuria. Anurias of the obstructive type include:

1 Unilateral block by calculus, stricture injury or neoplasm, the other kidney being normal. The anuria in such cases is best explained by reflex inhibition of the secretory activity of the other kidney.

2 Unilateral block with congenital absence, lack of development or complete loss of function of the other kidney as the result of disease injury or operative removal.

3 Bilateral block from the presence of a calculus or stricture.

The secretory anurias include those due to disturbances of circulation proximal to the kidney itself and disturbances affecting the renal parenchyma.

In the third group may be placed anurias following transfusion burns and gas bacillus infection. In these cases there is an obstructive factor in the form of blocking of innumerable renal tubules by hemoglobin crystals and resultant interference with the secretory activity of the parenchyma of the kidney.

From the standpoint of symptoms cases of anuria may be divided into those in which aside from the anuria there is complete absence of symptoms until the period of tolerance has been passed, those which present only minor degrees of intolerance and those in which the period of tolerance is very short (from twenty-four to forty-eight hours).

By period of tolerance is meant the interval between the time when the anuria is first noticed and the appearance of symptoms of uræmia. This interval varies from twenty-four hours to twenty or more days. In some cases there may be hiccough, nausea, vomiting, slight muscular twitching and brownness. These must be looked on as warning signals of the advent of the period of complete intolerance. In the latter the two outstanding symptoms are coma and convulsions.

In diagnosis of the cause of anuria an early and complete urological examination is necessary to exclude the presence of an obstruction due to calculus or stricture of the ureter and to diminish the percentage of cases allowed to progress so close to the end of the period of tolerance that relief comes too late.

The secretory type of anuria may be differentiated from the obstructive type more rapidly by roentgenography combined with cystoscopy and ureteral catheterization than by any other method. If cystoscopy shows two normally located ureteral orifices and if no obstruction is encountered when a ureteral catheter is introduced for a distance of from 28 to 30 cm. on both sides the anuria cannot be of the obstructive type if no urine is obtained. Pyelography is contra indicated during anuria. Chemical examination of the blood is indicated to determine the degree of nitrogen retention and how close the case has approached the period of intolerance.

The prognosis of secretory anuria is less favorable than that of anuria of the obstructive type. The therapeutic measures include the administration of large quantities of fluid by proctoclysis, hypodermoclysis, intravenous administration or the use of the duodenal tube. Nerve blocking of the splanchnic nerves has been advocated to relieve reflex inhibition of renal secretion. The author has had no experience with this procedure but believes it worthy of trial especially in cases of reflex anuria when removal of the contralateral obstruction or the passage of a ureteral catheter beyond the obstruction has been unsuccessful.

Decapsulation has been reported successful in cases of reflex anuria but in bichloride nephrosis its results have been less favorable. In obstructive anuria ureteral catheterization offers the best prognosis. It should be given a trial for forty eight hours but no longer.

The type of operation to be employed in cases in which all other methods have failed depends somewhat upon the preference of the surgeon. Some surgeons prefer nephrostomy, others pyelostomy, and still others ureterostomy with removal of the calculus at the same stage. Much depends upon the condition of the patient. If operation is undertaken during the first days of anuria when there is no evidence of intolerance it is justifiable to remove the calculus which obstructs the ureter or renal pelvis and utilize the ureterostomy or pyelotomy for drainage purposes. If symptoms of intolerance are noted it is advisable to limit the intervention to pyelostomy under paravertebral anesthesia and remove the ureteral obstruction secondarily. When the blood chemistry shows a total non protein nitrogen of 150 mgm. per 100 c. cm. and a creatinin of 5 mgm. neither non operative nor operative measures will be of much avail.

HENRY L. SANDER, M.D.

# SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

## CONDITIONS OF THE BONES JOINTS MUSCLES TENDONS ETC

Coley W B The Differential Diagnosis of Sarcoma of the Long Bones *J Bone & Joint Surg* 1938  
x 420

Coley applies the term periosteal sarcoma to all types of malignant tumor of the long bones which are not of central origin.

He states that in the diagnosis a good history is of first importance. This should include the patient's age, the facts regarding the occurrence of local trauma, the site of the neoplasm (shaft or end of the bone), the length of time the tumor has been present and the duration of the symptoms before the tumor appeared. In the physical examination the chief determinations to be made are the color of the skin, the presence or absence of dilatation of the superficial veins, the local temperature, the consistency and size of the tumor, the occurrence or non-occurrence of pulsation and the condition of the adjacent joint.

Of a group of 170 patients with periosteal sarcoma, 67 were between ten and twenty years of age, 41 between twenty and thirty, and 27 between thirty and forty. Therefore 135 were between ten and forty years of age. Of 50 patients with giant cell tumors, 36 were between ten and forty years of age.

The first symptom of sarcoma of the long bones is pain of an intermittent and varying character which increases in intensity as the tumor grows.

Trauma plays a very definite role in the development of the lesion. Of the 170 cases of periosteal sarcoma, a history of local injury was obtained in 87 and of the 50 cases of giant cell tumors, such a history was obtained in 28.

In decreasing order of frequency of involvement the bones affected were the femur, tibia, fibula, humerus, radius, ulna, and clavicle. In the femur the tumor developed most often in the distal end, whereas in the tibia, fibula, and humerus it occurred most frequently in the proximal end.

A tumor of small size and long duration is most probably benign, while a tumor of large size and short duration which is accompanied by pain is almost sure to be malignant. Myositis ossificans and ossifying hematoma must be ruled out.

A purple discoloration of the skin due to dilatation of the superficial veins overlying the tumor is strong evidence of malignancy. However, this is a rather late sign.

The consistency of a bone sarcoma may be described as firm but not hard. The neoplasm is softer than an ossifying hematoma and harder than tuberculous osteitis. In the later stages it may

become soft or even fluctuant. If a joint is involved at an early stage, the tumor is probably not a sarcoma. The local temperature may be elevated but general fever is absent except in later stages with metastases.

Röntgen ray examination may allow a positive diagnosis in (1) osteogenetic sarcoma with radiating bone lines at right angles to the shaft, (2) myositis ossificans, and (3) endothelioma. In the interpretation of the roentgen findings it is necessary to know at what stage of the growth the roentgenogram was made. In benign tumors the shadow is of more uniform density and has a more regular and sharply defined border than in malignant tumors.

The author is not opposed to biopsy as he is of the opinion that the danger of dissemination is theoretical rather than practical. However, he emphasizes the danger of infection and states that diagnostic biopsy should be limited to cases in which a positive diagnosis cannot be made by clinical means. He believes that in cases of central and giant cell tumors, biopsy should be a part of the treatment. It should not be limited merely to the removal of a small portion of the tumor but should consist in a complete and thorough curettage down to healthy bone. In tumors of the ilium, biopsy should never be done as these neoplasms are practically all inoperable when they are first discovered.

Aneurism may cause pressure necrosis of a bone simulating sarcoma, but the clinical history and Wassermann test will aid in ruling it out. Some difficulty may be experienced also in differentiating a Ewing tumor (endothelioma) from osteomyelitis. In a case in which the bone lesion was thought to be subacute osteomyelitis, even after operation and later proved to be an endothelioma, the surgeon recalled that he had found the bone in layers. Such a laminated structure is an important feature in the differential diagnosis. In another case the condition was at first thought to be a sarcoma, but as the pathological report was benign amputation was not done. At operation the bone looked like normal callus, but later the tumor proved to be endothelioma and the patient died of metastases following amputation.

In a case coming under the author's observation, myositis ossificans was mistaken for sarcoma because too much reliance was placed on a pathological report of malignancy. Both patients recovered after treatment was stopped.

The difficulty in differentiating between chronic osteomyelitis and sarcoma is illustrated by 2 cases in which death occurred from metastases in the lungs after treatment had been given for eight months and three years respectively for osteomyelitis. The question arises whether in such cases the

original condition was merely an inflammatory process which later became malignant or whether the sarcoma cells were present from the beginning but so sparse as to escape notice on microscopic examination. The author favors the former view and cites 2 other cases in support of his opinion.

Osteitis fibro a cystica may also resemble osteogenic sarcoma. If the patient is between five and fifteen years of age the tumor is more apt to be a cyst than a sarcoma.

The differentiation of bone sarcoma from syphilis should not be difficult in these days of the serological test. The luetic bone lesion is rarely single and occurs most frequently in the tibial shaft and the clavicle.

Tuberculosis of the bones is much slower in its course than sarcoma and the pain associated with it is less severe and is easily controlled by immobilization. In sarcoma the swelling almost always begins in the diaphysis whereas in tuberculosis it begins in the epiphysis.

With regard to the differentiation of chondroma from sarcoma the author states that his experience has led him to discount the importance of microscopic examination especially when the tumor is growing rapidly. In the diagnosis of chondroma however the roentgen ray is of great aid as the roentgenographic appearance of the tumor is quite characteristic.

The endothelioma of Ewing usually involves from a third to a half of the shaft when it is first seen. A history of trauma is obtained in these cases about as frequently as in those of sarcoma. Apparently the neoplasm sometimes originates in the periosteum. There is not much bone destruction and the bone production takes the form of thin layers parallel with the shaft. Frequently the skull is involved. The tumor yields to the roentgen ray, radium and mixed toxins more readily than sarcoma.

While it is generally believed that a correct diagnosis between giant cell tumor and osteogenic sarcoma can be made on the basis of clinical and roentgenological evidence alone it has been noted at the Hospital for Ruptured and Crippled that an error has been made in 1 out of 3 cases when reliance has been placed on these findings alone. The giant cell tumor is usually a dark red or grayish red encapsulated friable body in the epiphyseal region which grows more slowly than a sarcoma and seldom forms metastases. Six tumors in the author's series which were diagnosed as giant cell tumor later proved malignant. One of these was included in a report of typical giant cell tumors in the Registry.

Metastases of sarcoma from one bone to another occur most frequently in the vertebrae and ribs. Such metastases however are not so common as those from carcinoma of soft tissues. In several large series of cases of carcinoma of the breast the incidence of bone metastasis was found to range from 12 to 20 per cent. If a perinephroma forms bone metastases in about 20 per cent of the cases. The differential diagnosis of metastases of hypernephromata is most difficult because the primary tumor is often

so small that it does not cause symptoms and therefore escapes detection.

Paget's disease confined to a single bone may be mistaken for sarcoma. The author believes it is impossible to differentiate between these 2 conditions without a biopsy and microscopic examination. He reports a case with a lesion in the tibia in which every symptom and objective finding indicated Paget's disease but later developments prove the tumor to be malignant. Amputation was done and the microscopic examination showed the neoplasm to be a chondrosarcoma. WILLIAM A. CLARK M.D.

**Leriche R.** The Problem of Osteo Articular Diseases of Vasomotor Origin Hydrarthrosis and Traumatic Arthritis. Genesis and Treatment. *J. Bone & Joint Surg.* 1928 x 492.

In discussing the genesis of hydrarthrosis and arthritis of vasomotor origin Leriche says that trauma in the region of a joint produces at this level a hyperæmic reaction. If this persists for longer than ten days it results in synovial osseous and cartilaginous changes. In the synovia (in a joint of large size) it produces a true subacute aseptic synovitis with marked exudation of fluid thus creating a hydrarthrosis. In the bone it produces active rarefaction a lacunar osteoporosis which is evident in roentgenograms. When the rarefaction reaches the subchondral portion the cartilage becomes detached shows disturbances of nutrition and in places may be destroyed. Traumatic arthritis is then produced.

At the onset of the condition rest and the application of cold water or ice are indicated. Leriche has performed blood letting and has used leeches. Massage, mechanotherapy, heat and plaster of Paris immobilization are contra indicated.

When synovial and bony changes have occurred Leriche uses hyalrotherapy without massage. For serious cases he recommends surgery in the form of sympathectomy and amputation.

JULIUS LEWIN M.D.

**Mannini R.** Lipoma of the Tendon Sheaths (Contributo allo studio dei lipomi della guaine dei tendini). *Pidm.* Rome 1924 xxxv. 22. 318-364.

The author reports a case of arborescent lipoma of the tendon sheath of the superficial flexor of the second finger in a woman sixty seven years of age, a case of simple lipoma of the sheath of the tendon of A. hiles in a woman forty five years of age and a case of arborescent lipoma of the sheath of the tendon of Achilles in a boy sixteen years of age.

He states that simple and arborescent lipomata of the tendon sheaths are blastomata which are usually made up almost exclusively of fatty tissue. In the cases he reports they were more or less rich in connective tissue. In some instances they grow slowly and remain circumscribed in the tendon sheaths while in others they surround the tendon sheath and become intimately adherent to the adjacent tissues.

Their etiology is unknown. According to one theory they are inflammatory whereas according to another, they are tuberculous. Biological tests for tuberculo is however have been negative.

The most frequent sites of such tumors are the sheaths of the extensor tendons of the fingers. The arborescent form is more common than the simple. In some cases crepitation has been noted but it was not present in those reported by the author. Some of the tumors are painful and others painless.

The diagnosis is not particularly difficult but because of its elasticity and fluctuation the tumor may be mistaken for an abscess. The diagnosis is aided by the movement of the neoplasm with the movement of the affected tendon.

The prognosis is good. Sometimes the tumor causes no disturbance at all. When function is disturbed it becomes normal after removal of the tumor. Removal of the growth is generally easy. The capsule should be dissected from the neoplasm and used to reconstruct the sheath.

VADNEY G. MORGAN, M.D.

Baranger, J. Two Cases of Acute Osteomyelitis of the Spine (Deux observations d'ostéomyélite aiguë de la colonne vertébrale). Bull. et mém. Soc. nat. de chir. 1923 liv. 739.

The first case of acute osteomyelitis of the spine reported by Baranger was that of a man twenty five years of age who while in apparently good health was seized with chills, lumbar pain and headache. Three days after this attack the patient entered the hospital and for nine days remained in a somnolent condition with a temperature of about 38.5 degrees C. Soon local signs were noted in the lower lumbar region on the left side. These were followed by continuous pain in the left leg and after a few days by the development of an abscess in that leg. Iressure over the first and second lumbar vertebrae then caused pain and other signs of abscess without skin changes. The temperature reached 40 degrees C and the pulse ranged from 120 to 130.

At operation the tibial abscess was opened and pus was demonstrated in the medullary canal. At a second operation a collar button abscess leading to the necrotic body of the first lumbar vertebra was opened by a paravertebral incision in the lumbar region. Cultures yielded staphylococci. Later a focus developed in the upper end of the right humerus. A roentgenogram taken after several months showed a still active osteitis in the bodies of the first and second lumbar vertebrae and cavity formation in the latter.

The second case reported was that of a fifteen year old boy who had recently suffered from furunculosis and was seized with acute lumbar pain, chills, epistaxis, vomiting and a fever of 38.5 degrees C. Pressure over the spine of the first lumbar vertebra and the surrounding muscles was acutely painful and within a period of twenty four hours fluctuation developed in the region of the first lumbar vertebra.

At operation two days later a paravertebral incision on the left side was made, the center of the incision corresponding to the center of the zone of involvement. When the sacrolumbar mass was retracted pus was evacuated which on culture yielded staphylococci. Operation revealed also a denuded and roughened lamella. This was removed. After the operation symptoms of meningitis developed. The treatment of this condition consisted in blood transfusions and injections of colloidal silver, autogenous vaccine, neosalvarsan and auto serum. For ten days the child was desperately ill but after eighteen days was well enough to be sent home. Complete recovery resulted. KELLOGG, SPEED, M.D.

Holm, H. Vertebral Tumors (Ueber Wirbeltumoren). Deutsche Zeitschr. f. Chir. 1923, cxxvii, 46.

Vertebral tumors are rare. From 45 to 52 per cent of them are sarcomata. The majority are fibrosarcomata and are primary in the spine. According to Guleke the so called hour glass forms constitute a distinct group of spinal canal tumors which in spite of their undoubted sarcomatous cell structure are clinically rather benign and being well demarcated are operable.

Carcinoma occurs in the vertebrae only metastatically and because of the improvement in the early diagnosis of the primary tumor carcinomas of the spine is becoming correspondingly rare.

Hypermephroma also occurs in the spine metastatically and has an unfavorable prognosis.

Of the benign vertebral tumors the osteoma and chondroma are rare. Their diagnosis is facilitated by the roentgen ray. As a rule they are not difficult to reach by operation and their prognosis is favorable. Hemangioma is extremely rare. All of the cases reported in the literature most of which were those of girls at the age of puberty ended fatally.

Not belonging to the vertebral tumors but producing tumor like symptoms are the echinococcus cysts. As a rule these begin in the paravertebral tissues and involve the vertebrae secondarily. All publications on echinococcus disease of the spine emphasize that the cysts occur most frequently in the upper thoracic and the lower lumbar vertebrae. Of importance in the diagnosis of vertebral echinococcus is a good history, the blood picture (eosinophilia), the roentgen picture, Weinberg's reaction (complement fixation) and Cason's intradermal reaction. The prognosis is poor, the condition usually being fatal.

Actinomycosis of the vertebrae has an equally unfavorable prognosis. Guleke advises operation in every case since the effects of potassium iodide and roentgen irradiation are uncertain.

Gummatas of the vertebral column are extremely uncommon. They occur most frequently in the cervical vertebrae.

The diagnosis of vertebral tumors is difficult only in the earliest stages. The best aid is the roentgen picture made after the introduction of lipiodol into the spinal canal (Sicard). Sensitiveness of the verte-

hæc is not a certain diagnostic sign. For the diagnosis of the level of the tumor, the neurological segment diagnosis is indispensable.

The treatment of choice is operation even for cases in which the period for radical removal is known to be past since decompression of the cord is followed by at least temporary improvement.

In conclusion the author reports in detail a cured case of chondroma of the cervical vertebra which was treated at the Heidelberg Clinic in 1926.

SCHENK (Z)

Cotton A. Giant Cell Tumor of the Spine with the Report of a Case. *Am J Roentgenol* 1928 xx 18

The giant cell tumor of the spine discussed by the author is the tumor formerly known as giant cell sarcoma. It is a benign neoplasm and usually occurs at the ends of long bones. In about 3 per cent of the cases that have been registered the tumor was located in the spine.

The author's case was that of a boy fifteen years of age who gave a history of an injury to the buttocks three years previously and a sprain of the lumbar muscles four months later. His back was stiff and painful and motion was limited in all directions. In the lumbar region examination revealed a kyphosis and a scoliosis with its convexity toward the left. To the left of the fourth and fifth lumbar vertebrae a large fluctuating mass could be palpated. Deformities of the left hip, knee, ankle and foot had resulted from posture and muscle paralysis. The roentgenogram showed bone destruction of the left side of the body and of the processes of the fifth lumbar vertebra and of the left ala of the sacrum, marked bone atrophy without bone production and partial spondylolisthesis of the fifth lumbar vertebra. The intervertebral disk had not been destroyed.

The pre-operative diagnosis was lumbosacral Pott's disease with a lumbar abscess. Surgical exploration revealed the bone destruction shown in the roentgenogram and a cavity containing old blood, friable granulation tissue and loose pieces of bone. There were no indications of a tuberculous abscess. The operative diagnosis of sarcoma or benign giant cell tumor of the spine was confirmed by the pathological report on the tissue removed.

After the operation roentgen ray therapy was given and attention was directed toward correction of the deformities. Today two years after the operation some of the deformities still persist but the roentgenogram shows the bone to be restored and the patient is apparently well.

This case demonstrates that the diagnosis of giant cell tumor of the spine may be very difficult requiring the aid of the history, physical laboratory and roentgenological examinations, exploratory operation and pathological examination of the removed tissue. While not pathognomonic the roentgen ray findings are the most valuable aid in the differentiation of such tumors from other destructive bone lesions of the spine. The differentiation is important

because of the difference in the prognosis and treatment of the various neoplasms.

Roentgen ray treatment should be tried if the condition is discovered early. As a rule a tumor mass develops before the patient seeks treatment and an exploratory examination is necessary. All of the tumor tissue and loose bone should be removed and pressure on the cord or cauda equina should be relieved. The operation should be followed by several courses of short wave length radiation. Deformities should receive proper orthopedic treatment. Under such management, the prognosis is good. Recurrences should be treated in the same way as primary growths.

CHARLES H. HEACOCK, M.D.

Beer E. Periostitis and Osteitis of the Symphysis and Ramus of the Pubis Following Suprapubic Cystotomies. *J Urol* 1928 xx 233

Beer states that every year for the last twelve years he has seen one or more cases of periostitis and osteitis of the symphysis and ramus of the pubis following suprapubic prostatectomy or cystostomy. As the cause of these sequelae he suggests that traction on the attached rectus muscles may inaugurate a localized periostitis which subsequently spreads.

The clinical picture is very striking. When the patient tries to sit up or cough he experiences pain due to the pulling of the rectus muscles against the sensitive inflamed attachment at the symphysis. In some of the cases the condition is very mild and becomes localized at the attachment of the rectus muscles but in the majority it extends without any febrile reaction down along the descending ramus of the pubis causing pain and tenderness along the attachment of the adductor muscles which interferes with walking and separation of the thighs. The disturbance may last for several months but finally under appropriate treatment and with time seems to go on to resolution with restoration to health. The physical signs are tenderness on palpation of the body of the pubis and if the process is fully developed along the descending ramus down to the ischium. The roentgenogram of the pubis shows a fraying of the periosteum along the descending ramus and perhaps areas of absorption in the symphysis, the descending ramus and the body of the ischium which are due to the osteitis. As the areas of absorption often strongly suggest secondary malignancy the diagnosis should not be based upon the roentgenogram alone.

GEORGE C. HENSEL, M.D.

Henderson M. S. Giant Cell Tumor of the Upper End of the Femur. Report of Three Cases. *Ann Surg* 1928 86 542

Henderson says that a definite diagnosis of giant cell tumor should not be made in any atypical case without exploration and examination of the tissue by a competent pathologist. Whereas in the past many radical operations were performed needlessly

today there is danger that with the increasing dissemination of the knowledge that these tumors are benign patients who should be treated radically will be treated conservatively.

At the present time the term giant cell tumor is applied to tumors that were formerly listed as giant cell sarcoma, giant cell sarcoma of the epulis type, hemorrhagic osteomyelitis and myeloma (a British term which is still being used). The confusion that exists is evident from Kolodny's statement that hundreds of giant-cell tumors have been reported as sarcoma to the Registry of Bone Sarcoma by clinicians and pathologists in all sections of the country.

There are two divergent views regarding the origin of giant cell tumors. According to one these neoplasms are blastomatous whereas according to the other they are inflammatory. For the safety of the patient it is probably better to consider them as of blastomatous origin until further proof of their inflammatory origin has been established. In 54 per cent of the cases in the Mayo Clinic trauma appeared to be a definite etiological factor. There seems to be a close relationship also between osteitis fibrosa cystica and giant cell tumor.

Giant cell tumors are rare in children and the aged. As they are of slow growth and rarely cause much discomfort they often reach a great size. Not infrequently the sign that impels the patient to seek advice is a fracture. These tumors are most common in the lower extremities and are usually found at the end of the bone. Roentgenograms show that the shaft does not continue into the tumor as it does in sarcoma, but that at the juncture of the tumor and the shaft there is a well developed shoulder. In the wall of the tumor irregular trabeculations are seen. The neoplasm may completely erode the spongiosa of the epiphysis and creep along the ligaments so that in advanced cases all roentgenographic evidence of the normal structure of the end of the bone may be lacking. However the tumor remains sharply circumscribed and enclosed in a thin shell of bone. In the advanced late cases the differentiation from osteogenic sarcoma is difficult but it must be remembered that in osteogenic sarcoma of such size rarely remains encapsulated.

At operation the appearance of the tumor varies greatly according to whether or not a tourniquet is used. In cases of the vascular type of tumor a brisk hemorrhage will occur if a tourniquet is not used. The older the tumor the greater the cicatrization at the outer layers and hence the less the tendency toward hemorrhage. In the terminal stages of certain tumors only fluid and a definite sac lining the interior of the tumor may be left.

In each of the three cases reported in this article the tumor was situated in the upper end of the femur.

In the first case that of a girl of eighteen years the symptoms had been present only seven months. The tumor was excised during the active period of growth when the vascular mass within the cavity

could be scooped out. After the operation roentgen ray treatment was given.

The second case was that of a woman thirty nine years of age who had sustained an injury of the hip in a fall eight years previously while she was pregnant. Following delivery the condition of the hip improved and the patient had no more difficulty but a few years later when she was again pregnant the pain recurred. Two or three months before operation at the Mayo Clinic she again became pregnant but a miscarriage occurred in the second month. Roentgenograms showed an extensive tumor in the upper end of the left femur which extended well up into the neck of the bone to the head involving the whole trochanteric area and down a short distance into the shaft below the level of the lesser trochanter. Operation revealed a smooth lined cyst with walls containing many giant cells. The cavity was packed with several pieces of bone taken from the tibia. A month later as the patient was leaving the hospital the bone fractured but five years after the operation she was able to walk, dance and do her own housework and the roentgenographic and clinical findings indicated the occurrence of union that may well be described as bony.

The third case was that of a woman aged twenty four years who had been operated upon elsewhere for the hip neck and trochanteric areas of the femur having been removed for giant cell tumor. The tissue was examined in the Mayo Clinic laboratory. Five years later a recurrence in the upper end of the femur was evident and excision was advised. This case demonstrates the tendency of these tumors toward local recurrence.

In conclusion the author states that both of the patients with active lesions were anemic whereas the patient in whom the condition was in the terminal cystic stage was in robust health.

## FRACTURES AND DISLOCATIONS

Lindsay M. K. *Relaxed Motion in Fracture Treatment. A Preliminary Report. J. Bone & Joint Surg. 1928. 519.*

Lindsay discusses the massage and mobilization treatment of fractures recommended by Lucas-Championniere and recently modernized by Menell. He emphasizes that the massage is not the application of pressure or force but a gentle rhythmic stroking which is soothing and agreeable to the patient. The purpose of the effleurage is to relieve muscle spasm. The procedure is extremely effective when early mobilization is indicated but its value is inversely proportional to the length of time that has elapsed since the injury. In cases of elbow fractures reviewed by Lindsay it was usually continued for about twenty minutes. At the end of that time nitrous oxide oxygen was administered to permit gentle manipulation consisting in extension with moderate traction followed by acute flexion of the joint. The position of acute flexion was then main-

tained by a broad band of adhesive tape and the elbow elevated on pillows. Thereafter the effluage treatment was repeated daily for several weeks. Movement in extension was stopped at the first evidence of discomfort. After from fifteen to twenty days active motion was substituted for the so called relaxed motion and special care was directed toward exercising the triceps muscle. All of the exercises in extension were done with the hand supinated.

PAUL C. COLONNA M.D.

### Seudder C. The Operative Treatment of Recent Fractures *Proc Roy Soc Med Lond 1928* xvi 1683

Seudder states that a surgeon who operates upon recent uncomplicated fractures must possess an adequate knowledge of the patient's physical mental social and industrial status an exact knowledge of all of the conditions bearing upon the case perfect mechanical instrumental and physical equipment including access to an x-ray apparatus a proved operative technique to which he is accustomed an understanding of the sensitive nature of bone tissue its reaction to injury and the conditions influencing the process of repair practical experience in the successful treatment of certain fractures by modern non operative methods a knowledge of the various tried and accepted operative procedures for approach to fractures and their immobilization and an open mind in the selection of the method best adapted to the case in hand.

Under present conditions fractures fall into three groups (1) those never operated upon (2) those usually operated upon and (3) those in which the advisability of operation must be regarded as doubtful.

In the first group will be found Colles' fracture most fractures of the clavicle many fractures occurring in children and adolescents and many birth fractures.

In the second group those usually operated upon are fractures of the greater tuberosity of the humerus with displacement fractures of the surgical neck of the humerus with displacement fractures of the olecranon with separation of the small fragment fractures of the head or neck of the radius with such displacement of the small proximal fragment as would without operation produce limitation of pronation and supination and possibly limitation of elbow flexion and extension fractures of the shaft of the radius with displacement toward the ulna separation of the epicondyles of the humerus which are not held by the acutely flexed position and those occurring in cases in which the acutely flexed position is contraindicated certain elbow joint fractures in adults irreducible fractures of the shaft of the femur at an level displacements of the femoral condyle fractures of the patella with displacement certain spiral or oblique fractures of the tibia and fibula fractures of the os calcis in which the line of fracture enters the astragalocalcaneal joint fractures about the ankle joint which are difficult to

hold and certain metacarpal and metatarsal fractures.

In the third group those in which the advisability of operation is doubtful are fractures of the spine with immediate symptoms of a transverse lesion of the cord fractures of the humeral shaft above the middle and fractures of both bones of the forearm.

In conclusion Seudder states that it must always be borne in mind that the proper use of skeletal traction upon the condyles of the femur the tibial crest or the malleoli or through the os calcis may diminish the necessity for operative treatment by direct incision as an initial method of choice.

ANTHONY F. SAVA M.D.

### Geist E. S. and Henry M. O. Dislocations and Simple Fractures of the Elbow *Minnesota Med* 1928 xi 509

The authors review 150 cases of fracture and dislocation of the elbow seen in private practice. The ages of the patients were as follows:

Age	N	P	t	Age	N	P	t
0-5	30	20	00	31-40	1	8	00
6-10	31	20	30	41-50	9	6	00
11-15	20	13	33	51-60	4	2	50
16-20	11	7	33	61-70	2	1	30
21-30	30	0	00	71-80	1	0	00

In 110 of the cases the dislocation or fracture was due to a fall. In 72 the injury was direct and in 38 indirect. In 23 cases the cause was an automobile accident.

Seven of the cases were seen on the day injury was sustained 25 during the first week after the accident 36 during the second third or fourth weeks 5 after from one to two months 36 after from two months to one year 10 after from one year to five years 2 after from five to ten years 8 after from ten to twenty years and 1 after twenty years.

The types of fractures and dislocations were as follows:

D location	Cases	P t
Backward	9	6 0
Backward with fracture	5	3 4
Internal lateral	2	1 4
External lateral	1	0 7
Dislocation of head of radius	3	2 0
Fractures		
External condyle	22	14 7
Internal condyle	11	3
Internal epicondyle	7	4 7
Internal epicondyle	4	2 7
Intercondylar fracture	5	3 3
Supracondylar	2	18 0
Distal humerus	16	10 7
Fracture of head of radius	16	10 7
Fracture of coronoid process	2	1 3
Fracture of olecranon	11	3
Explosive fracture	9	6 0



The treatment of each type is described. In the discussion of fractures of the olecranon process in which the lateral fibrous expansions of the triceps are torn, emphasis is placed upon the importance of firm suturing of the fibrous expansions in apposition. Immediately after this suturing the arm should be flexed to at least 45 degrees and the elbow put at rest in that position.

The authors state that explosive fractures usually result from a direct injury such as the striking of the elbow on the pavement in a fall from a height. All of the bones comprising the joint are shattered into many pieces. The prognosis is always serious. In 3 of the 9 cases reviewed open surgery was attempted but the end results were not so good as those obtained in the cases treated conservatively. Conservative treatment consisted in extension with the aid of a Balkan frame combined with early active and passive motion.

ROBERT V. FURSTON M.D.

Roth, F. B. Fracture of the Spine of the Tibia  
*J Bone & Joint Surg* 1928 x 509

Roth reviews the literature on fracture of the spine of the tibia and reports five cases. He advises immediate operation and emphasizes that division of the anterior horn of the lateral meniscus allows the exact replacement of the fragment in the top of the tibia far more satisfactorily than any other procedure.

As a rule the patient suffering from a fracture of the spine of the tibia gives a history of very severe injury followed by very rapid distention of the joint cavity of the knee. There is marked limitation of movement especially of extension and the knee is semiflexed.

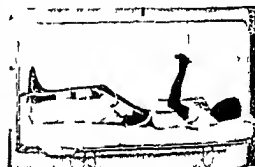
Roth applies a tourniquet and splits the quadriceps patella and ligamentum patellae vertically. On complete flexion of the knee the vertical incision allows excellent exposure. After the blood and blood clots have been swabbed from the joint the anterior horn of the lateral meniscus is divided and the bony

fragment is replaced in its original position. The knee is then completely extended, the wound closed and plaster applied. After immobilization for one month active movement and massage are begun.

PAUL C. COLONNA M.D.

Caldwell, G. A. A Portable Frame for the Suspension and Traction of Fractures of the Lower Extremity  
*South M J* 1928 xvi 438

For the suspension and traction of fractures of the lower extremity Caldwell uses a modified Thomas splint and a Bradford frame with cot springs instead of canvas and with an overhead frame of pipe at right angles from which the extension device is suspended on a trolley. When an ordinary Thomas splint is used extension is ob-



Modified Thomas splint extension attachment and transfexion pin suspended on portable frame

tained by the use of a turnbuckle and spring balance. When a Steinman pin is employed a special splint is used. The angle is adjustable and extension is obtained by turning the nuts of the sliding side bars. This apparatus is portable when set up and simplifies the after care of the patient.

W. P. BLOUNT M.D.

# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

## BLOOD VESSELS

Pearse H E Jr An Experimental Study of Arterial Collateral Circulation *Ann Surg* 1928  
LXXVIII 227

The increasing importance of surgery of the vascular system led the author to carry out experiments upon dogs to determine the rôle played by the main trunks and lateral branches of the blood vessels and by the vasa vasorum following operative procedures. Pearse calls attention to the fact that much attention has been paid to the collateral channels developing after the ligation of arteries to the technique of arterial suture and to the effect of ligation upon the arterial wall but beyond such studies little has been done to determine the response of the vessels to surgical procedures. Therefore further inquiry must be made regarding the natural response of the organism to alterations in the circulatory bed.

In the author's investigations to determine the necessity of the main arterial channel the femoral artery was entirely excised from the inguinal ligament to its termination in the popliteal space. Through a long incision on the inner surface of the leg the artery was isolated, lifted from its bed and divided between ligatures first at its point of emergence beneath the inguinal ligament. The lateral branches were dissected out and divided about 1 in lateral to the parent trunk. The dissection was continued to include the popliteal artery. The tibial and peroneal arteries were also isolated, drawn up as far as possible, ligated and divided.

In the six dogs upon which this experiment was performed there was no evidence of gangrene or functional disturbance. Two weeks after the operation the roentgenogram made after the injection of Hill's opaque mass showed an amazing increase in the vascular network of the limb deprived of its femoral artery. Histological study of muscle removed showed that the vascular increase was due entirely to dilatation of pre-existing vessels and not to the formation of new vessels. It was thus proved that the main vascular trunk is not essential for viability and function of an extremity.

In the experiments to determine the importance of lateral branches as collateral channels after ligation of the main artery segments of the femoral artery were isolated by the use of silk ligatures. Some segments had no branches while others had from one to four. In the segments with one or more lateral branches the blood pressure rose rapidly. Fourteen weeks after the operation the various segments were removed for examination. Isolated segments showed complete atrophy and those with one branch were greatly reduced in size. In the segments with two branches the main artery atrophied

between the ligatures and the branches while the part between the branches became smaller. It appeared that the arterial trunk became a part of a smaller artery which then consisted of a branch in which the current was reversed, the main artery between the branches and a branch in which the direction of flow was unchanged. A segment with three or four branches atrophied between the ligature and the first branch and then resumed its normal caliber.

In the experiments to determine the rôle of the vasa vasorum in the formation of collateral channels after ligation it was found that if a 2 per cent aqueous solution of Prussian blue was injected into a branchless segment of artery, the vasa vasorum would fill. A 3 in segment of the carotid artery was used. Within twenty-four hours after the ligation there was formed an amazing anastomosis of the vasa vasorum with the small arteries in the surrounding tissues by means of which the vasa vasorum on the distal side of the ligature became filled with the dye. Later the vasa vasorum destroyed at the time of ligation regenerated and passed over the ligature. It was thus proved that the vasa vasorum act as collateral circulatory channels after arterial ligation.

MORRIS A. SLOCUM, M.D.

Girardier J de and Stricker P An Early Thrombosis of the Bifurcation of the Aorta. The Importance of Surgical Exploration of the Bifurcation in Establishing the Differential Diagnosis in Certain Types of Obliterative Arteritis and Determining the Choice of Treatment (A propos d'une thrombose précoce du carrefour aortique. Importance de l'exploration chirurgicale de ce carrefour pour l'établissement d'un diagnostic différentiel dans certaines artérites oblitérantes et le choix d'une thérapeutique). *Rev de chir* Par 1928  
XVI 97

Thrombotic or embolic obliteration of the aorta is seldom due to Buerger's disease and except in cases of aneurysm seldom occurs before the fifty-fifth year of age. The clinical picture varies with the location of the lesion, the degree of vascular stenosis and the rapidity of development of the obstruction. The diagnosis is not difficult when the condition is established suddenly. Under such circumstances severe pain on one or both limbs, coldness and blueness of the affected parts, often associated with paræsthesia and anesthesia, the absence of pulsation in the peripheral arteries in the part and the rapid establishment of gangrene (except in a few cases in younger persons) with a fatal termination make a definite clinical picture. When the condition develops more slowly the diagnosis is difficult and may not be made for some time if at all, although suggestive symptoms due to involvement of the periaortic sympathetic (Leriche) might be expected. Several cases

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POBLAT V. LUNSTON M.D.

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W. P. BLOUET M.D.

size of a bean nodules the size of a pigeon's egg in the calf muscles and a torpid subungual suppuration. When the subungual suppuration is mistaken for an ingrowing toe nail and operated on the results are disastrous.

In a well developed case of gangrene of the great toe the pulsation of the dorsalis pedis and the posterior tibial arteries is reduced or abolished and the sphygmomanometer usually reveals normal pulsations no higher than Hunter's canal. When the limb is elevated it becomes ischemic and when it is allowed to hang dependent it becomes bright red (Buerger's erythromelia).

The diagnosis of thrombo angustis obliterans is difficult. Syphilis and diabetes must be eliminated. Microscopic examination of the arteries is of no value unless it is done in the early stages of the disease. Later the picture is always the same.

The author concludes that in most of his cases the condition was Buerger's disease. He finds the original description of Buerger exact in every detail. The condition begins as an acute thrombo angustis. The wall of the vessel becomes infiltrated by foci of leucocytes and giant cells. The lumen is quickly obliterated by a thrombus and as the acute stage passes the vessel is converted into a fibrous cord. The disease evolves chronically with acute exacerbations. There seems to be general agreement that the condition is confined largely to the Jews of Russia and Poland, but the Chinese and Japanese seem to be quite frequently affected by it and it has been known to occur also in other races.

Juvenile arteriosclerosis, endarteritis obliterans of old texts is less frequent. It lacks the acute stage of Buerger's disease and is accompanied by atheroma of the abdominal aorta. Its etiology is as obscure as that of senile arteriosclerosis.

The prognosis of Buerger's disease is extremely deceiving and variable. There may be remissions of months or years. In some cases the progress of the condition is more rapid but occurs by steps so that in cases of gangrene some surgeons have been led to advise a high amputation from the beginning. The author is in favor of amputating as economically as possible.

Various medical treatments have been advocated. The viscosity of the blood may be reduced by intravenous injections of saline solution or the administration of 8 to 10 liters of saline solution by duodenal tube. The use of intravenous injections of saline solution during a period of four years at the Mt Sinai Hospital New York considerably reduced the number of amputations.

Ambari and Vaquez advise injections of insulin to combat the supposed hypersecretion of the supra-

renals. Sodium nitrite and acetyl choline have been used because of the vasodilation produced. Hypertonic saline solution, sodium nitrate and acetyl choline appear to be of most value.

Of the physical agents diathermy seems the most effective.

Surgical measures such as ligation of the femoral vein, ligation of the external iliac vein and anastomosis of the vein and artery have been used but the results of most of them have been poor or transitory.

Lewis proposed ligation of the femoral artery immediately below the deep femoral to prepare the col laterals against thrombosis of the popliteal artery. In four cases in which this was done the immediate results were good.

None of these operations gives permanent relief. The same may be said of periarterial sympathectomy but of all surgical procedures this is best as it combats the arterial spasm, often greatly relieves the pain and is simple and harmless.

Resection of the lumbar sympathetic is a difficult, dangerous and shocking operation which has no advantage over periarterial sympathectomy. Superrenalectomy has little or nothing to recommend it.

The author defends the conservative treatment of gangrene. He determines the level of amputation by the Moschowitz test. The leg is elevated and an Esmarch band applied for ten minutes. The height of the amputation is determined by the extent of the subsequent active hyperemia.

ALBERT F. DEGROAT, M.D.

## BLOOD TRANSFUSION

Matthews H. B. and Mazzola V. P. Observations on the Biochemical Changes in the Blood Following Radium Therapy. *In J. Obst. & Gynec.* 1928, 31: 97.

The occurrence of nausea and vomiting and other signs of discomfort following radium treatment has been ascribed to intoxication, disturbances of metabolism, acidosis, imbalanced enzyme changes and nephritis. Matthews and Mazzola studied a series of 100 cases with special reference to biochemical blood changes after radium irradiation. In 41 per cent there was a mild reaction which might have been attributed in part at least to the pre-operative atropine or morphine or the anesthetic. Following radium treatment of both benign and malignant tumors the blood area showed an increase but no definite relationship could be established between this increase and the reaction. The carbon dioxide combining power of the blood was not affected by radium irradiation and no evidence of renal impairment could be adduced.

E. L. CORNELL, M.D.

are cited from the literature in which the condition was discovered only at autopsy or the patient survived for a number of months or years.

The authors report a case from the clinic of Leriche in which despite careful observation the true nature of the condition was long unsuspected. The patient, a Spanish planter forty five years of age with a history of syphilis in youth, had suffered for five years from intermittent claudication and pain over both kidney regions. The pain in the legs was much more severe in the right leg than the left and was of a constricting nature. It began in the toes and radiated toward the dorsum of the foot. Sleep was almost impossible.

Examination revealed marked venous dilatation of the legs, cyanosis of the feet, redness of the toes and creases of the right fourth toe. In the horizontal position the extremities became very pale. With the exception of a slight pulsation of the left femoral artery, no arterial pulse could be felt. Pachon's oscillogram showed no movements even after the limbs had been immersed in warm water. The blood and urinary findings were normal.

Treatment for Buerger's disease (insulin, normal salt solution and hypertonic salt solution intravenously) failed to give relief. Because of the progressive pain in the toes and also to some extent on account of the insistence of the patient, Leriche undertook a revision of the femoral vessels and periaortic sympathectomy. After removal of the adventitia the arteries contracted but no pulsation was noted and the tissue about the vessels did not bleed. The oscillogram showed some movements in the left leg but none in the right.

The slight benefit derived from this operation led Leriche to remove the left suprarenal gland which showed definite histological evidence of hyperactivity. Following this operation however the pains and discoloration were more intense and within forty eight hours the condition became alarming. The patient was very much agitated, the pains failed to respond even to morphine, the cyanosis was marked, the pulse soft and rapid and the urine diminished in quantity. Leriche thought of aortic thrombosis but could not differentiate it from acute hypotension with capillary stasis. Accordingly ouabain and insulin were administered and the limbs were massaged. Slight improvement resulted. Adrenalin was then given. This produced a condition resembling shock. Glucose, heat stimulants and massage were of only transitory benefit and the patient died. Autopsy revealed an aortic obliteration of the femorals and a recent clot in the lower aorta extending down to the bifurcation.

Leriche believes that in this case the removal of the suprarenal gland was absolutely contraindicated. While this procedure is often of value in Buerger's disease it is harmful in an arteriosclerotic thrombosis of the type under discussion. The differential diagnosis of the causes of arterial obliteration is therefore of importance. As in the case reported, the age of the patient may not exclude Buerger's

disease. Tests of the viscosity of the blood may give some clue. It appears probable that in thromboangiitis obliterans there is an increase in the viscosity. Hertz has noted besides the usual physical and instrumental findings a marked palpable enlargement of the epigastric aorta associated with girdle pains. Leriche believes that in doubtful cases exploration of the aorta is justifiable.

MICHAEL L. MASON, M.D.

Leibovici R. Remarks on the Diagnosis and Treatment of Gangrene Due to Obliterating Arteritis in the Adult (Remarques sur le diagnostic et le traitement des gangrènes par artérites oblitérantes de l'adulte) *J. de ch.* 1918 xxii 334.

Serious attention has been paid to presenile gangrene and obliterating arteritis by French physicians only in the last few years. In the many articles appearing in the recent literature are found two points of view. Some of those writing on the subject see in obliterating thromboangiitis a new morbid entity due to a specific organism spreading insidiously throughout the world. Others leave even the individuality of Buerger's disease.

Leibovici reports the results of a study of sixteen cases of obliterating arteritis in young adults.

He states that gangrene of the lower extremities is far from rare and that the cases observed in the pre-angrenous stage will become still less rare as physicians learn to recognize the early stages of arterial obliteration.

Occasionally the gangrene appears suddenly. For several days there are violent pains usually in the great toe. As in senile gangrene the pain is most severe at night. In the course of a few days the toe becomes anoxic and cold and soon thereafter mummification appears.

Frequently the gangrene follows months or years of cramps in the plantar surface of the foot and sluggish trophic ulcers of the toes.

In all cases the gangrene develops very sluggishly and for weeks a line of demarcation appears. In the meantime the pain increases in severity. The patient is unable to walk and at night suffers violent paroxysms.

Among the prodromal symptoms intermittent claudication is very constant. As this sign is variable to the same patient it is evidently due in large part to arterial spasm.

Cutaneous irritable phenomena are usually striking. They may consist in intense hyperemia when the patient is upright (the Vaquez sign) or pallor and coldness of the extremity after he has walked a short distance.

Sometimes the arterial obliteration is latent and the disease is manifested by changes in the superficial veins, segmentary acute thrombophlebitis which heal with obliteration of the vessel. Sometimes a phlegmatic alba dolens results from involvement of both deep and superficial veins.

Other phenomena are painful purpuric spots on the dorsum of the foot, subcutaneous nodules the

to the patient. Braun's rule of awaiting the induction of anaesthesia before making the incision is ignored. When the tissues are incised the greater part of the fluid escapes but anaesthesia is already present. Without further delay the author then continues alternately using the scalpel and the syringe.

For an operation on the kidney the solution is injected subcutaneously along the entire length of the skin wheal until a raised infiltration results, the needle being held vertically at right angles to the skin. Then without delay the incision is made down to the aponeurosis. The injection of the muscles is also done vertically. With this technique it is possible to inject deeply a sufficient quantity of solution to saturate the muscles until they are markedly swollen. After the injection the incision is made without delay.

The next step in the operative technique is the pushing backward of the fascia renalis propria which is now exposed. Then the interfascial space is injected through the posterior fold of the renal fascia with the use of a 10 cm. needle. The needle is inserted progressively higher toward the diaphragm until it reaches the superior pole of the kidney. By this technique the entire space between the anterior and posterior fascial sheets is filled with solution. The lower pole is treated in the same manner, i.e. several syringefuls of solution are injected through the posterior layer of the aponeurosis in the lower part of the space.

The fascia renalis propria is never opened until it is certain that the kidney as well as its capsule are floating in the solution. When the renal capsule is incised the excess of solution escapes into the wound. After the excess of solution and the blood have been sponged out the kidney is dissected from its capsule.

This stage of the operation is of the greatest importance in determining the further success of the anaesthesia. The proper execution of the method assures perfect anaesthesia in a large percentage of cases. If this stage of the technique is not carefully timed (too rapid opening of the posterior sheet) all previous work will have been wasted and the anaesthesia will be poor.

If the patient complains of severe pain during the dissection of the fatty capsule or the mobilization of the kidney into the incision an injection of the anaesthetic is made through the fatty capsule to the hilus.

The entire technique usually requires from 300 to 600 c. cm. of  $\frac{1}{4}$  per cent novocain containing 4 drops of adrenalin per 100 c. cm. The instruments used are a 1 c. cm. syringe with the usual needles and a 10 c. cm. syringe with needles 50 and 100 mm. long.

During the last three years the author has operated upon sixty one patients with the technique described. The types of operation were as follows: (1) fifteen nephropexies with simultaneous appendectomy, (2) eight pyelotomies for renal calculus, (3) seventeen nephrectomies for neoplasms, pyelo-nephrosis or infectious nephritis, and (4) one capsular nephropexy with associated rectococcygopexy for prolapse of the rectum.

There was one death in this group of cases that of a woman sixty years of age with neglected pyonephrosis. In this case the inferior vena cava was injured.

Light ether anaesthesia (50 per cent ether) was necessary once in the removal of a kidney neoplasm, a large hypernephroma, in the case of a stout powerful male. As a rule there is no postoperative intoxication.

SAMUEL J. LOUISOV, M.D.

# SURGICAL TECHNIQUE

## OPERATIVE SURGERY AND TECHNIQUE POSTOPERATIVE TREATMENT

Itarris R I and Stoddart W O A Simple Apparatus for the Continuous Intravenous Administration of Physiological Salt Solution *Canadian M J* 1st J 1923 xix 346

In the technique for the intravenous administration of physiological salt solution described by the authors more than the usual care for asepsis is necessary as the apparatus may be in use for several days. The receptacle for the fluid is kept covered with a gauze and cotton filter. When it is empty it is replaced by a filled container.

A small vein on the dorsum of the hand or foot is exposed under local anesthesia and a No. 17 gauge gold needle inserted and tied in with catgut. The wound and needle are covered with sterile gauze made fast with adhesive tape. The apparatus is arranged so that the solution drips through a glass capsule as in the Murphy drip at the rate of 20 drops to the cubic centimeter.

Glucose solutions are not used by this method as they give rise to thrombosis of the vein. Clotting in the needle causes very little trouble in the small veins. Not more than 35 c cm of fluid should be administered per pound of weight in twenty-four hours.

The method described was devised to meet the needs of certain surgical conditions such as the toxæmia of intestinal obstruction and burns but has been found of value in many medical conditions.

GEORGE A COLLIER M D

## ANESTHESIA

Hadfield C F Shipway F E Daly A Thomas L K and Others Discussion on Late Ether Convulsions *Proc Roy Soc Med Lond* 1923 xvi 1599

HADFIELD cites a number of cases in which convulsive attacks occurred during ether anesthesia. Some of the patients died either on the table or subsequently in the ward. He states that during the convulsions the action of the cardiac and respiratory centers does not seem to be affected primarily. If the anæsthetic is discontinued the movements may diminish and recovery may follow. A number of samples of the ether used in the cases cited were analyzed in an attempt to determine the cause but nothing definite was found. Hadfield reaches the following conclusions:

1. Some persons possess an unexplained tendency to develop convulsions under ether anesthesia.

2. In most if not all such persons one or more accessory factors may be necessary for the development of these convulsions.

3. Such factors may include (a) heat (b) sepsis or other toxæmia (c) impurities in the ether (d) youth.

4. We know of no treatment except the withdrawal of the ether. The administration of oxygen possibly combined with carbon dioxide may be of value. Chloroform should be avoided.

5. We cannot at present explain the absence of record of such cases previous to about 1916.

DALY cited the case of a patient thirty years of age who was subjected to partial gastrectomy for ulcer. Ether vaporized with oxygen was given through a Shipway inhaler. Convulsions began after forty minutes but were immediately controlled by the administration of carbon dioxide in oxygen. Examination of the ether in the inhaler showed the presence of acetaldehyde and peroxides.

THOMAS states that in his opinion the symptoms are the result of over etherization.

MENNELL suggests that over oxygenation or the formation of impurities in the ether from the use of oxygen may be a contributory cause.

JOHN H GARLOCK M D

Wischnewsky A W My Method of Infiltration Anesthesia for Kidney Surgery (Eine Methode der Infiltrationsanästhesie bei Nierenerkrankungen) *Zentralbl f Chir* 1923 Nr 9

The author states that practicality should be the first consideration in kidney surgery under anesthesia induced by the infiltration method. As early results were discouraging a variety of methods of block anesthesia (Lauen Kappus Braun Finsterer) were suggested but when the results obtained with block anesthesia were reported a definite inadequacy in the technique was evident since in some cases the block anesthesia was supplemented with ether and in others with infiltration anesthesia and in some cases death resulted.

As an advocate of the infiltration method the author has previously reported modifications of the technique which have been found of value. In this article he discusses only the induction of anesthesia for kidney surgery. In 1923 he made his first report to the Congress of Russian Urologists in Leningrad. Even at that time he was able to report a rather large series of cases in which infiltration anesthesia was used successfully. He states that his earlier work was based upon intuition but that he has now developed an exact and simple technique based upon definite rules.

Major surgery with infiltration technique can be executed successfully only if the surgeon is not limited in the amount of solution that can be used. By injecting the various layers separately the author makes a stretched infiltrate with a quantity of solution which is effective without being harmful.

dose Distance and time are subject to great variation in the treatment of different lesions In general the shorter the distance the greater the economy of radiation

The 4 gm pack used by the author has a lead wall 10 cm in thickness immediately surrounding the radium The radium is distributed over a circle 7.5 cm in diameter The skin area is limited by the use of a beam 10 cm in diameter This circular cross section of the beam seems suitable for many deep tumors and yet is not too large to use in cross firing Theoretically a square or rectangular cross section beam would be better for widespread irradiation but practically it is not

The radium in the pack is placed in a recess 6 cm deep the minimal distance from the skin being 6 cm The time required to deliver the erythema dose at 6 cm with this 4 gm pack is three hours about the average length of treatment to the average patient

The radium is distributed over a circular surface area of 44 sq cm with a diameter of 7.5 cm The radium is distributed in forty tubes each of which contains 100 mgm of sulphate and has a wall thickness of 0.35 mm of platinum except the cap which is 0.5 mm thick More tubes per area are placed about the periphery than centrally The tubes are held upright in a bakelite disk The radium is mounted in a revolving lead cylinder 15 cm in diameter which can be revolved inside a larger outside lead cylinder in such a way that in one position the distance from the radium to the skin is 6 cm and in another is 10 cm Also a position can be employed which gives complete protection during adjustments and preparation of the patient As the external opening of the recess containing the radium is 10 cm in diameter the taper of the 6 cm recess is greater than that of the 10-cm recess The whole pack weighing 310 lb is housed in brass and mounted on a steel frame with an electrically operated carriage which permits free movement of the heavy apparatus and adjustment as desired Safety devices are at

tached Two treatment rooms are maintained in one of which a patient is prepared while in the other a patient is being treated After a treatment has been completed the pack is transferred to the other room through an aperture in the wall Three minutes are required for the transfer

The article contains diagrams of the treatment rooms showing the location of lead insets to absorb secondary radiation It contains also reproductions of films showing exposure to the pack with the use of the 6 and 10 cm recesses respectively at a distance of 10 cm in air and with a paraffin phantom to illustrate scattered radiation such as occurs in the human body

The minimal screen used is 0.35 mm of platinum and 1.5 mm of brass This filter intercepts the beta rays and some of the soft gamma rays

A diagram shows the radiations in a water phantom as determined by ionization measurement In a chart are given the threshold erythema doses in milligram hours at various distances and the relative depth doses at different depths These determinations were made in a water phantom by means of a small ionization chamber

The author states that whenever the geometrical and cylindrical conditions of the case permit it is more economical to deliver the 10-cm depth dosage by three crossfire irradiations than by one exposure However the radiations reaching the 10 cm depth are not identical by the two methods

In practice a cross section tracing is made of the area to be treated and various arrangements are tested by means of the charts to determine the proper distances and the number of fields The combined doses received by different parts of the tumor are recorded

In conclusion Failla says that the described pack is perhaps unique in the large thickness of protective lead the device for turning off the radiations and the device for adjusting the heavy apparatus

A JAMES LARKIN M D



# PHYSICO-CHEMICAL METHODS IN SURGERY

## ROENTGENOLOGY

Packard C. A Comparison of the Quantitative Biological Effects of Gamma and X Rays  
*J. Cancer Research* 1924 xii 60

The purpose of the experiment reported in this article was to compare the lethal effect of gamma rays with a measured quantity of radium emanation with that produced by X ray doses of known intensity.

The eggs of the common fruit fly, *Drosophila*, had been previously used by the author as a standard of measurement for the intensity of the action of the X ray. The proportion of eggs killed depends upon the intensity of the X ray beam and the length of exposure; the wave length is not a factor. When the intensity is lowered the death rate is proportionately less, regardless of the wave length. The intensity of the X ray dose can be estimated with considerable accuracy if the percentage of eggs hatching and the duration of the exposure are known. This test has been used to measure the output of an X ray machine.

When a curve is plotted showing the percentage of a hatch after a certain length of exposure to both gamma rays from radium emanation and the X ray, the effect of radium and the X ray seem to be quite closely parallel. As more than 50,000 eggs were used in the experiment, a considerable degree of accuracy was attained, especially when more than 30 per cent of the eggs were hatched.

Certain criticisms of this method of measuring radiation intensity brought forward by Zuppinger are answered.

The curves obtained by exposing tumor cells to these two radiations also corresponded quite closely.

It was assumed in these experiments that the wave length is not a determining factor in the biological effect produced; that is, that long waves are not biologically more active than short ones. This assumption, though not yet fully proved, is held as reasonable since biological effect and ionization are parallel within such a wide range of wave length that they are probably parallel within the short lengths not yet tested.

HARRY C. SALTZSTEIN, M.D.

## RADIUM

Pailla G. Design of a Well Protected Radium Pack  
*Am. J. Roentgenol.* 1928 i 9

The author applies the term pack to applicators from all points of which the skin receives radiation and not to beams of rays limited by lead screens.

The relative depth dose delivered by a pack may be expressed in percentage of the skin dose. The

relative depth dose at any given point increases with the filtration, the area of the pack, and the distance between the radio-active source and the skin. Other factors being equal, the relative depth dose decreases with the depth.

Only tumors having a radiosensitivity greater than that of the skin can be treated with packs unless cross-firing is done.

Theoretically, it should be possible to deliver to deep tumors the dose necessary by varying the factors of filtration, area of source, and distance. Practically, the radio-sensitivity of tumors is not known and the factors of filtration, area, and distance may be so great that adequate irradiation is impossible with the amount of radium available.

Ordinarily, 5 mm. of brass or its equivalent is considered sufficient filtration. Greater filtration increases the time of exposure unnecessarily. It is not agreed that 10 to 15 mm. of lead or 5 to 10 mm. of platinum admit radiation having a selective action on cancer. Some substance absorbing the secondary rays from the brass should be interposed between the filter and the skin.

In general, the larger the source area, the greater the relative depth dose that is delivered; that is, when the source area is large, the relative depth dosage does not decrease so rapidly as when the source area is smaller.

The distribution of the radium units over the source area is such that the unit per area increases from the center peripherally. In this way, it is possible to obtain a more even distribution of the radiation in planes parallel with the plane of the applicator.

The most important factor to be considered is the distance. In general, the relative depth dose increases with the distance. The increase in the relative depth dose is most rapid for a point source and becomes less marked as the radiating surface increases in area.

The filtration is fixed at 2 mm. of brass, but the source area and the distance are determined by economic and biological factors. One gram of radium at a distance of 10 cm. over 70 sq. cm. of area produces a three-hour erythema in twenty hours. If the distance were 15 cm., forty-five hours would be required for this effect. In the determination of the distance to be used, the mechanics of the application, the relative merits of long and short applications, the biological effects of the two types of exposures, and the personal equation of the radiologist all have a bearing.

In general, the distance is so adjusted that the skin dose may be administered by the amount of radium available in the time allotted. A lower relative depth dose with a full skin dose is of greater value than a higher relative depth dose with a fraction of a skin

first was the case of a woman who entered the hospital with eclampsia and died a few hours later. Microscopic examination showed mycelial filaments in the kidneys almost exclusively in the somewhat thickened walls of the vessels. There was no inflammatory reaction in either the kidneys or the other organs. This was a saprophytic mycosis that had been perfectly tolerated and may have been present for a long time.

The second case was that of a woman who was delivered normally but was re-admitted to the hospital ten days later in a condition of coma and cyanosis with signs of congestion of the lungs and a temperature of 40.7 degrees C and died a few hours later. Mycelial filaments were found in the blood vessels of the uterus but had not caused any inflammatory reaction in that organ. In the capillaries of the lungs there was an intense proliferation of mycelia. The fungi had apparently not caused inflammation of the alveoli but the circulatory disturbance produced by them had led to the acute oedema of the lung which was the cause of the patient's death.

Three other cases are cited briefly. In the first branched mycelial filaments were found in an inflamed appendix; in the second they were found in a large tumor of the thigh which had been diagnosed as a sarcoma; and in the third they were found in an osteosarcoma of the lower third of the femur.

The author believes that the latent form represented by the first case is common. He states that in general these mycoses are only slightly virulent.

Various forms of the fungi are found—long and short mycelia and spores. The lesions they cause range from inflammation to chronic progressive inflammatory new growths.

AUDREY G. MORGAN M.D.

## HOSPITALS MEDICAL EDUCATION AND HISTORY

Parker G. The Early Development of Hospitals  
(Before 1348) *Brit J Surg* 1918 xvi 39

Parker traces the early development of hospitals to the time of the Black Death. The earliest hospitals were founded in the sixth century B.C. in places far apart both in the West and the East. Among the early founders were such famous men as Kaiser Karl the Great, Haroun Al Raschid, and the English king Athelstan.

Buddhist hospitals sprang up after the death of Gautama in 543 B.C. In the Buddhist period of about 600 A.D. able surgeons were practicing laparotomy, intestinal suture and rhinoplasty, and numerous hospitals were built by victorious rulers, monasteries and individuals.

Of the early Zoroastrian hospitals little is known. Their establishment began at about 500 A.D. and in the main they resembled the Buddhist institutions.

In the Western World hospitals had two sources: the Æsculapian cult and a provision for sick citizens made by the Greeks who were intent on forming a model city state and had a large body of able medical men at their command. The Temples of Asklepios, established at about 500 B.C., claimed many cures and provided baths, massage, bleeding operations and drugs. Fees were charged to the well to do. In addition to these temples there were numerous other healing shrines, great numbers of private secular doctors, and also even as early as 600 B.C. a highly paid and well trained public medical service.

In the Roman Empire there were great and well equipped hospitals with complete medical staffs. During the time of Augustus military hospitals were of a high order. There is reason to believe that in the social troubles of the Roman world between 100 and 300 A.D. many hospitals were abandoned. After the advent of Christianity a remarkable expansion of the hospital system took place in the Roman world. The bishops' hospitals became very important military hospitals under Byzantine rulers were improved and well equipped, and many civil hospitals were founded.

In the Moslem world hospitals and medicine made extraordinary progress because of the advanced civilization and wealth of the early Caliphs. The inspiration leading to the advance of medicine and the establishment of hospitals came from two sources: (1) the neighboring Byzantines and (2) the great school of Gondishapur of Greek, Persian and Indian origin.

After the year 1200 European hospitals began to increase in number. Numerous foundations were established by individuals and by bishops, canons and monastic orders. Soon however the practice of medicine by churchmen was greatly reduced as it was found to interfere with ecclesiastical duties. The work and management of the hospitals was then taken over largely by lay societies organized for the purpose.

JACOB M. MORA M.D.

## MISCELLANEOUS

### CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Heiman J. Implantation of Rat Carcinoma and Sarcoma within Benign Fibro Adenoma. *J. Cancer Research* 1928 xii 73

Mixtures of different tumors such as sarcoma and carcinoma for example have been transplanted into mice by different investigators. As a rule the neoplasms grew together but each strain could be separated by growing it in animals susceptible to only one type of tumor. When tumors varying in virulence and proliferative capacity were mixed and transplanted the most energetic type overgrew the others in a few generations. The result was not an amalgamation of tumor strains into a new type but rather a mixture of two types of tumors which retained their morphological characteristics. The same phenomenon has been observed in the metastasis of complex tumors occurring in man such as those of the testicle. The highly specialized tissues rarely appear in the secondary growth. Instead sarcomatous chondromatous or carcinomatous elements dominate in the metastases.

In the authors study neoplasms of a highly malignant variety were inoculated into the center of a slowly growing benign tumor. The benign tumors were large spontaneous fibro adenomata of the breasts of rats. These were soft lobulated growths histologically conforming to the human type of fibro adenoma of the breast with a densely fibrous stroma interspersed with regularly growing or distorted or compressed glands arranged in lobules. As they could be transplanted some of the experiments upon rats were carried out on transplanted tumors.

When carcinoma cells from the very active Flexner rat carcinoma were injected into the depths of the benign tumor they grew in the depths without visibly affecting the health of the animal or appreciably modifying the development of the benign tumor. There was no change in the structural characteristics of either the benign tumor or the carcinoma even though they were growing in close proximity.

The carcinoma cells seemed to remain in the center of the benign tumor. Their growth was frequently surrounded by dense connective tissue and hyalinization. In one instance cyst formation developed. Probably the poor vascularization of the benign tumor was responsible for the slow growth of the injected carcinoma. In one experiment in which the needle was accidentally forced beyond the tumor the carcinoma grew beyond the poles of the benign tumor and metastasized throughout the body.

When a spindle cell sarcoma was injected into this benign tumor the sarcoma infiltrated the benign tu-

mor and extended outside and around it and later found a path through the abdominal and chest wall into the mesentery and mediastinum.

The carcinomata continued to remain encysted in the center of the benign tumor while the sarcomata seemed to be able to grow along the track of the needle infiltrating the fibrous tissue and ultimately to escape into the tissues of the host. The benign tumor seemed to play a wholly neutral part. When the carcinoma cells which had been implanted into the benign tumor were later transplanted into another animal there was no change in their biology and they grew as rapidly as control tumors which had not been imprisoned in the connective tissues of a benign neoplasm. This observation is cited as further evidence against the theory that an organism is responsible for the growth of malignant tumors since it might be expected that if an organism were present it would stimulate the benign tumor to become malignant.

The author suggests that the conditions thus artificially produced resemble the clinical cure seen after radiation in which tissue of the cervix or other connective tissue structures are found on microscopic examination to contain neoplastic cells which are evidently viable but remain quiescent because on account of the closure of the vessels their nutrition is insufficient for proliferation. When this sheltering influence of a dense fibrous tissue is disturbed as for instance by biopsy or other surgical intervention a recurrence is likely to take place. This is additional evidence that after a clinical cure has been produced by radiation no further surgical intervention should be permitted.

Clinical cases also show a difference between the behavior of carcinoma cells and sarcomata similar to that noted in this experiment namely the difficulty of influencing the spindle cell types of sarcoma by radiation as compared with carcinoma despite extreme scarring of the tissues about the sarcoma.

HARRY C. SALTZSTEIN, M.D.

### GENERAL BACTERIAL PROTOZOAN AND PARASITIC INFECTIONS

Durante G. Histological Forms of Internal Human Mycoses (Forme histologiques des mycoses internes humaines). *Gynecolog* 1928 xxvii 311

With the exception of aspergillosis and actinomycosis diseases due to fungi were for a long time considered rare in man but it has been found that mycotic infection in the human being ranges from absolute saprophytism to the most acute septicemia.

The author has recently seen two cases in pregnant women that represented these extremes. The

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*Supplementary to*  
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Editor: Communications Should Be Sent to Franklin H. Martin, Editor, 54 East Erie St., Chicago  
Editorial and Business Offices: 54 East Erie St., Chicago, Illinois, U.S.A.  
Publishers for Great Britain: Baillière Tindall & Cox, 8 Henrietta St., Covent Garden, London, W.C.





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# Case of Encephaloid Disease of the Kidney Removal, &c

By CHARLES L. BRONNAN, M.D.

East Troy, Wis., U.S.A.

On the 4th of June last, I was invited to assist Dr. E. B. Wolcott of Milwaukee in the removal of a tumor from the abdomen of Mr. J. aged 58 years. On examination we found that the patient was a tall, anæmic-looking man of a peculiar cast of countenance indicative of serious organic disease. He stated that he was of healthy parentage, and had good health until the appearance of the tumor six years before that time. The physician in attendance stated that from the first appearance of the disease some irritation of the urinary organs had existed, but that the deposits were so numerous that he was unable to learn as no reliable chemical or microscopical evidence was presented. It was probable, however, from the statements made that an albuminous deposit was the principal one.

We found the tumor to be large, filling the right hypochondric region and pressing the abdominal parietes forward about two inches from their natural level. On palpation it was evident that it was semi-solid, having a pedicular attachment apparently to one of the sulci of the liver with a more extensive attachment to the posterior parietes.

Having no reliable data to form a diagnosis other than the present state, after duly considering the patient's anxiety and his disposition of general health, we concluded that an operation offered the only chance of

ultimate recovery. At the same time we stated to the patient and his friends that the operation was a serious one in his state of health. Our conclusion was that we had here a cystic tumor of the liver pressing on the kidney and producing irritation sufficient to account for the albuminous deposit. After the administration of chloroform, Dr. Wolcott proceeded to the removal of the tumor by making a incision diagonally across it down to the peritoneum, which we found to be very much thickened and slightly attached to it. He next made an incision into the tumor, which we found to be an encephaloid mass. He then proceeded to free it from its extensive posterior attachment, after which he found that the superior attachment was a very dense cord-like structure about as thick as a circumference, and apparently proceeding from the posterior part of the liver. Carefully tying the pedicle, he secured this connection with the knife and after removing the matter carefully from the abdomen brought the edges of the wound together with common sutures and adhesive strips, which was the only dressing used. After the patient was free from the effects of chloroform, morphine and camphor were administered to sufficient quantities to quiet irritation and produce sleep.

The tumor weighed about two and a half pounds and on incision freely we found no doubt avidence of its being a kidney from a small portion of its upper part on which had not degenerated showing the tubules and a portion of the pelvis of that.

The patient lived fifteen days after the operation and died apparently from exhaustion caused by the great amount of suppuration which necessarily followed.

Facsimile of Dr. Stoddard's original report of Dr. Wolcott's case



kidney and throw the entire labor upon the other. Pathological records afforded many instances in which one kidney had been gradually rendered functionless by slowly progressing disease and where compensatory hypertrophy had gradually become established without disturbance. But whether sudden withdrawal of one kidney would be tolerated had still to be proved by experiment upon animals. For the purpose of cleaning up this point Simon performed fifteen nephrectomies upon dogs and found (1) that the greatest risk of death was from peritonitis (2) that primary and secondary hæmorrhage were less to be feared than he anticipated (3) that pyæmia and embolism were not met with in a single case (4) that the effect upon the elimination of the renal excretion was not such as to lead to symptoms of uræmia (5) no albuminuria or hypertrophy of the heart resulted from the operation and (6) the remaining healthy kidney within a short time increased in size and was soon competent to perform the double duty suddenly imposed upon it. These

results encouraged Simon to perform nephrectomy in 1860 eight years later than Wolcott. But as Garrison<sup>1</sup> says: "He killed his second patient by sepsis from a digital exploration."

Dr Wolkott's nephrectomy was as the account shows an operation of necessity. No clear cut diagnosis was possible and only on subsequent examination was the removed tumor mass found to be a diseased kidney. It will be noted that the patient died fifteen days after the operation.

apparently from exhaustion caused by the great amount of suppuration which necessarily followed. Nevertheless this operation may be looked upon as marking a milestone in surgical progress. The prompt publication of Dr Stoddard's report in a Philadelphia journal advanced the surgical world of the feasibility of nephrectomy performed via the laparotomy route although at the time this patient and all those similarly situated faced that relentless surgical enemy—infection.

It is a fact that the

# ABSTRACTS OF CURRENT LITERATURE

## SURGERY OF THE HEAD AND NECK

### HEAD

**Todd H C Aseptic Cavernous Sinus Thrombosis**  
*Arch Otolaryngol* 1928 41 134

Todd states that lateral sinus thrombosis is the result of extension by contiguity of tissue. Following inflammatory processes within the temporal bone due to infection the membranous sinus becomes surrounded by inflammatory tissue and frequently lies in a pool of pus. The inflammation then involves the vein causing the intima of the vessel to throw out a sticky exudate which picks up the red and white blood corpuscles and other constituents of the blood and forms an aseptic thrombus. If the pus is not removed by prompt operation the vessel walls soon soften. When this occurs the surrounding bacteria readily penetrate them and the thrombus becomes infected. A new syndrome is then presented and the blood picture is that of bacteremia. If operation is not performed at this time the infected thrombus begins to break down and the symptoms and blood picture are those of septicemia.

Todd believes that all lateral sinus thrombi are aseptic during the formative period and that lateral sinus thrombi are not formed as the result of the direct passage of micro organisms into the lateral sinus or of an infected embolus into the sinus.

He reports a case in which the patient developed first a mild infection of the sphenoid sufficient to cause inflammation of the contiguous cavernous sinus and the intima of the cavernous sinus threw out sufficient exudate to pick up the red and white blood cells and blood platelets to produce a thrombus. However as the sphenoidal sinus has a rather large opening for natural drainage and sphenoidal infection always tends to become cured spontaneously resolution took place before the infection had broken down the membranous walls of the cavernous sinus and allowed the bacteria to infect the thrombus.

Morris H Kahn, M.D.

**Maybium J L and Goldman I B Primary Jugular Bulb Thrombosis**  
*Los Angeles J Surg* 1928 33:11 69

In primary jugular bulb thrombosis an infected thrombus is formed in the lateral dome of the jugular bulb. In the early stages the lateral and sigmoid sinuses are not affected. The authors review the clinical aspects of the condition and report nine cases.

Primary jugular bulb thrombosis should be considered in the diagnosis of cases with a history of middle ear suppuration, a persisting septic tem-

perature and septicemia otherwise unexplained. It occurs most commonly in young children. The temperature ranges from 99 to 104 degrees F. The organism responsible usually a hemolytic streptococcus can be easily recovered from the blood stream. Of considerable value in the localizing of the affected sinus is a differential blood culture according to the method of Ottenberg. His technique calls for a culture from both internal jugular veins. The number of colonies grown from the culture of the sound side exceeds the number of colonies grown from the blood obtained from the affected side because the obliterating thrombus prevents the passage of organisms into the systemic circulation.

Prompt surgical interference is imperative. The operation should be done with minimal trauma. Ligation proximal and distal to the thrombus should be done and the sinus curetted and drained.

In the cases reviewed operation revealed a sclerosed mastoid and an intact sinus wall which was gray and lusterless and contained an obliterating thrombus.

Anthony I Siva, M.D.

**Borra E Inflammatory Tumors of the Submaxillary Gland**  
*Contributo allo studio dei tumori infiammatori della ghiandola sottomascellare*  
*Chirch* Rome 1928 13:1 317 345

Borra reports a case of recurrent inflammation of the submaxillary gland in a woman twenty five years of age which began about five years ago with fever and difficulty in swallowing. At first conservative treatment caused the condition to recede leaving only an induration of the gland but in the last attack the swelling had not yielded to it.

On its removal the tumor proved to be an inflammatory neoplasm of the submaxillary gland this being shown by small cell infiltration. The operation was followed by uneventful recovery.

The etiology of inflammatory tumors of the submaxillary gland is unknown. The neoplasms occur as a rule in adults and more frequently in males than in females. It is generally agreed that the inflammation is of a bacterial nature but the causative micro organism has never been isolated.

In the beginning the condition is apt to be confused with a true tumor. However the inflammatory tumor grows toward the skin rather than toward the floor of the mouth grows more slowly than a true tumor and does not affect the general health or cause gland metastases. Syphilis can be excluded by biological and therapeutic tests.

If the inflammatory mass is removed the prognosis is good. The only treatment is surgical. Removal



from the exterior is preferable to removal through the mouth as it gives a better opportunity for radical extirpation and good drainage

AUDREY G. MORGAN M.D.

# EYE

Wheeler J. M. Pulsating Exophthalmos. *Atlantic M J* 1928 XXXI 812

Wheeler reports five cases of pulsating exophthalmos and draws the following conclusions

1 As pulsating exophthalmos is essentially a progressive condition practically all cases should be subjected to treatment even when the pain is negligible and the head noises cause little annoyance

2 Digital compression should be begun as soon as the diagnosis is made. There is a remote possibility of repair of the arterial lesion by organization and in any case compression is proper preparation for ligation of the common carotid. Digital compression may be safely practiced several times a day for periods of fifteen minutes

3 If the symptoms are severe prompt operation and generous doses of an analgesic (morphine) may be necessary

4 Incomplete blocking of the common carotid on the affected or more affected side is usually in order as a first operative step. Later complete blocking may be effected with section of the artery

5 If further relief is necessary the second common carotid may be operated upon in the same way after a few weeks and after preparatory digital compression. If the bruit is localized in the region of the superior ophthalmic vein this vein should be ligated in preference to the second common carotid

6 In any case with considerable protrusion secure adhesions should be obtained between the lid margins and firm pressure applied with a gauze dressing and pressure bandage. In this way the protrusion can be held in check and the cornea safeguarded. The pressure bandage is not safe without accurate apposition of the lid margins by sutures (if for only a few days) or by intermarginal adhesions (if for a considerable period). Three firm adhesions about 4 mm. long will probably meet the requirements. Plaques of epithelium the size of the desired adhesions should be removed from the lid margins above and below in the middle and midway between the middle and two ends of the palpebral fissure and the denuded areas brought into snug apposition by double-armed sutures passed through them which enter the skin surface of the upper lid near the margin and emerge through the skin surface of the lower lid near the margin. These sutures should be left in for five days and the patient should not be allowed to open the eye for five days more. At least during this ten day period a firm pressure dressing should be kept on. Ordinarily the intermarginal adhesions should be left for several months

7 Postmortem examinations should be made more frequently and the pathological findings reported in detail

LESLIE L. MCCOY M.D.

Anderson J. R. Reconstruction of Contracted Eye Sockets. *J College S & Australasia* 1931 12

In the operation described the lids are first freed from the orbital fascia by incising the conjunctiva above the upper and below the lower tarsus as much conjunctiva as possible being left attached to the lids. To obtain good exposure stout silk threaded on a needle is passed through the lids from the under surface and tied over a small section of rubber tube and then passed through the lid again. Three such sutures are placed in each lid. In making the upper incision it is advisable to save the levator palpebrae superioris. The lower incision extends along the orbital floor from canthus to canthus. All scar tissue is carefully excised

The guides throughout the operation are the requirements of a suitable artificial eye. A mould is made of dental wax sterilized in lysol. This consists of a pad with a handle in the center of the external surface. The mould should fill the socket so completely that the lids will just meet over it. Before the mould containing the graft is inserted the socket must be tightly padded to lessen the hemorrhage. Sutures are never required. The graft is of the Thiersch type cut from the inner surface of the thigh or the deltoid region. It is placed with the superficial surface against the mould and the edges meet around the foot of the handle. The lids are retracted and the mould is inserted and pressed carefully into the upper fornix. The lids are then drawn over it and the sutures tied while it is pressed tightly into the socket. Three pads are firmly strapped over the lids and a pressure bandage is carefully applied. The other eye is covered with a separate bandage

After the operation both eyes are kept bandaged for four days. The dressing is then changed and the lids are painted with mercurochrome. No further dressing is necessary until the seventh day. The sutures are then cut and removed and strapping is applied to keep the lids closed. On the tenth day the mould is removed washed in saline solution and reinserted. The lids are kept strapped until the third week when the mould is replaced by a large artificial eye. The final eye is inserted at the end of a month

The author emphasizes the importance of care in the treatment of scar tissue perfect fitting of the mould immobilization of the graft for at least seven days and the wearing of an oversized eye in the socket for four weeks

LESLIE L. MCCOY M.D.

Gifford S. R. The Acute Rise of Tension Following the Use of Adrenalin in Glaucoma. *Am J Ophth* 1938 XXXV 623

It is generally known that adrenalin while having no effect on the pupil or tension when dropped into the normal eye produces dilatation of the pupil with a marked decrease in intraocular tension when it is injected beneath the conjunctiva. Gifford soaks a small cotton pledget in adrenalin and places it in the upper cul de sac. This is as effective as injections

The eye is first given two instillations of 2 per cent butyn. A decrease in the tension is usually noted within one or two hours and after twenty-four hours the tension is often between 10 and 12 mm (Schiotz). It then gradually rises to about normal within the next day and often returns to its previous level above normal within a few days. In a fair number of cases it may then be kept normal for a much longer period by the use of eserine which previously was not effective.

Gifford has found that adrenalin or glucosan is of value in chronic simple glaucoma but is contra-indicated in acute inflammatory hemorrhagic and absolute glaucoma and in glaucomatous iritis. The danger of producing an attack of acute glaucoma is due to the adrenalin mydriasis. This can be prevented or decreased by the use of miotics before and after adrenalin treatment.

The author draws the following conclusions:

1. In chronic simple glaucoma adrenalin (or glucosan) is of definite value as an adjuvant to other remedies. It is dangerous in inflamed eyes and eyes with damaged vessels. Hence it is contra-indicated in acute glaucoma, in inflammatory and hemorrhagic glaucoma, and in absolute glaucoma.

2. It is contra-indicated also in glaucomatous iritis.

3. The danger of provoking acute glaucoma is due to the mydriasis.

4. There is more danger of provoking such attacks even in simple glaucoma than previous reports indicated.

5. Mydriasis should be prevented or decreased by the free use of miotics before and after adrenalin treatment.

LESLIE I. MCCOY, M.D.

Duke Elder, W. S. The Etiology of Glaucoma.  
*Brit. M. J.* 1928, 11, 230.

The first matter to be settled in the problem of intra-ocular pressure is the nature of the processes controlling the formation of the aqueous. The aqueous is not a secretion nor under normal circumstances a transudate. It is a dialysate of the capillary blood formed by the same processes as the other tissue fluids. The process is modified however by the relative impermeability of the ocular capillaries. The fluid contents of the eye must be kept clear and practically free from colloidal micelles. This is accomplished by making the capillary wall relatively impermeable. A dialysate in equilibrium with its parent fluid must have a very precise and definite chemical composition, osmotic pressure, reaction, electrical potential, and relationship between its hydrostatic pressure and that of the parent fluid. The aqueous in all conditions is in complete thermodynamical equilibrium with the plasma—chemically, osmotically, electrically, and hydrostatically. Its formation is a physicochemical process.

The second fundamental determination to be made in the study of intra-ocular pressure is the nature of the circulation of the aqueous humor.

Three factors entering into this are: (1) a continuous metabolic interchange between the aqueous humor and the blood through the capillary walls; (2) internal thermal circulation caused by convection currents in the anterior chamber and most important, a through and through pressure circulation; and (3) the changes in the volume of the contents of the globe which occur in the vitreous.

The vitreous is a gel bathed in aqueous. The main determinant of its volume is the degree of hydration of its colloid particles.

If glaucoma is considered merely as a pressure symptom, the two main factors in its etiology are: (1) a derangement of the capillary circulation involving a capillary dilatation which produces a rise in capillary pressure or increased permeability of the capillary walls which allows an excess of colloids in the fluids of the eye, and (2) changes of a physicochemical nature in the vitreous. These two factors act either alone or together and their efficiency in causing a permanent rise of pressure depends directly upon the efficiency of the drainage channels in the region of the angle of the iris.

LESLIE I. MCCOY, M.D.

Gifford, S. R. Ocular Complications of Diabetes.  
*Med. Clin. N. Am.* 1928, 21, 423.

The best known ocular complication of diabetes is cataract, but the author believes that as a large percentage of diabetic cataracts occur after the fortieth year of age, a time of life when ordinary senile cataracts also develop, the importance of cataract as a complication of diabetes is overestimated. He states that a cataract should be regarded as a diabetic cataract only when it conforms to the type occasionally seen in young diabetics. This type is characterized by the appearance under the capsules of both lenses of fluid vacuoles which progress rapidly. A condition allied to diabetic cataract is the occurrence of remarkable changes in refraction during the course of diabetes. This is probably due to a change in the osmotic pressure of the blood. The high blood sugar allows fluid to penetrate the capsule, causing the lens to swell with resulting myopia.

Changes in the intra-ocular tension occur in diabetes. With high blood sugar and acidosis, hypotony is the rule. Two types of retinal lesions are seen: (1) white patches, which are usually small and single or occur in small groups; and (2) hemorrhages. It is probable that the arteriosclerosis which accompanies diabetes is an important factor in the etiology of the retinitis. The prognosis for life and vision is much better in these cases than in cases of albuminuric retinitis.

LYMAN A. COPPS, M.D.

Clark, N. T. Infection of the Eye. *Intern. J. Med. & S. Hyg.* 1928, 21, 436.

Clark reports the case of a fourteen-year-old boy in excellent general health who was struck in the eye by a piece of rock while he was working in a field. The wound penetrated the cornea but did

from the exterior is preferable to removal through the mouth as it gives a better opportunity for radical extirpation and good drainage

ALFRED G. MORRAN M.D.

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LESLIE L. MCCOY M.D.

Anderson J. R. Reconstruction of Contracted Eye Sockets *J. Coll. Surg.* 1st class 1928 1, 1

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The author emphasizes the importance of care in the treatment of scar tissue, perfect fitting of the mould, immobilization of the graft for at least seven days and the wearing of an oversized eye in the socket for four weeks.

LESLIE L. MCCOY M.D.

Gifford S. R. The Acute Role of Tension Following the Use of Adrenalin in Cicatrization *Am. J. Ophth.* 1928 1, 3 628

It is generally known that adrenalin while having no effect on the pupil or tension when dropped into the normal eye produces dilatation of the pupil with a marked decrease in intraocular tension when it is injected beneath the conjunctiva. Gifford soaks a small cotton pledget in adrenalin and places it in the upper cul-de-sac. This is as effective as injection

Howard H J The Intravenous Use of Typhoid Paratyphoid Vaccine in Eye Diseases *Am J Ophth* 1928 xi 35 685

Howard reports cases of ocular disease in which intravenous injections of typhoid paratyphoid vaccine gave excellent results. The injections were beneficial only when they were followed by fever. Contra indications to the treatment are (1) a temperature more than 2 degree C above normal (2) low vitality (3) any condition in which the added strain occasioned by a protein shock might not be well borne by the heart. LYMAN A CORPES M D

Hagedoorn A The Early Development of the Endothelium of Descemet's Membrane the Cornea and the Anterior Chamber of the Eye *Br J Ophth* 1928 vii 479

The author points out that there is no reason why we should assume that the formation of the structures of the anterior chamber in man is different from their formation in the higher animals. In several of the higher animals the corneal epithelium is the first structure anterior to the lens to be definitely differentiated and even in very young embryos it has a basal membrane. Between it and the lens an anterior vitreous has been definitely established. The latter is ectodermal in origin springing from the basal cones of (1) the epithelium of the lens (2) the margin of the optic cup and (3) the surface ectoderm.

In the lower forms of vertebrates a primitive cornea of hyaline membrane is formed early. Posterior to it the endothelium grows in as the first mesodermal element of the future cornea and then the stroma cells grow in edgewise between it and the corneal epithelium. At the same time or a little later as the endothelial cells grow in behind the surface ectoderm as a compact layer other mesodermic cells though moderate in number invade the anterior vitreous taking over the nourishment of its fibers. Under their influence the anterior vitreous changes its original aspect the fibers becoming much thicker. Because of the great vulnerability of these anterior vitreous postendothelial fibers fixatives cause shrinkage with the formation of artificial spaces. Previously these spaces were confused with an anterior chamber. In the very early stages there is no anterior chamber.

The first mesodermic element of the cornea is the endothelium of Descemet's membrane. This endothelium is entirely independent of the corneal stroma cells which are mesodermal epithelial cells.

THOMAS D ALLEN M D

Burky E I and Woods A G Lens Protein—The Isolation of a Third (Gamma) Crystallin *Arch Ophth* 1928 lvi 464

The authors have demonstrated that lens protein is composed of three immunologically distinct fractions alpha beta and gamma crystallin. The alpha and beta crystallins are pseudoglobulins antigenically active organ specific and lacking species

specificity. The gamma crystallin is an albumin which is isolated from the beta crystallin. The beta crystallin must therefore be considered a beta gamma complex. VIRGIL WESCOTT M D

Marlow S B A Case of Hemangioma of the Choroid *Arch Ophth* 1928 lviii 484

Marlow reports a case of hemangioma of the choroid in a nineteen year old boy who had a nevus on the left side of the forehead. The appearance of the retina suggested detachment due to exudate. Vision was reduced to hand movements and with an increase in the tension a secondary cataract appeared. As the pain became progressively more severe the eye was removed. The pathological examination was made by Verhoeff.

VIRGIL WESCOTT M D

Mann I G The Process of Differentiation of the Retinal Layers in Vertebrates *Brit J Ophth* 1928 xii 449

The author summarizes the general principles of the process of differentiation of the retinal layers in vertebrates as follows:

- 1 The ganglion cells are the first to differentiate
- 2 The amacrine cells are intimately associated with the ganglion cells and only secondarily separated from them
- 3 The inner nuclear layer is a complex layer containing elements derived from both the primitive retinal layers (i.e. the inner and outer neuroblastic layers)
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From a study of secondary modifications of these principles she draws the following conclusions:

- 1 The supporting tissue differentiates relatively late in phylogeny
- 2 The abbreviation of stages can occur without modification of the general plan
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## EAR

Grove W E Otological Observations in Trauma of the Head. A Clinical Study Based on Forty Two Cases. *J Ch Otolaryngol* 1928 viii 240

Grove states that persons who have sustained an injury of the head should be examined as soon after the accident as possible and at regular intervals over a considerable period of time.

The severity of the injury does not bear any direct relation to the development or degree of cochlear and vestibular symptoms.

Most injuries to the head in civil life are caused by a broadly acting force which compresses the skull

not cause incarceration of the iris. The physician who was first consulted prescribed simply a boric acid wash. Clark first saw the patient seventy-two hours after the accident. The eye was then inflamed and presented a yellow appearance with a greenish tinge extending over the iris and the structures just posterior to the cornea. The tissues were friable brittle and dry. There was no definite pustule but all of the tissues of the eye were swollen and there was a rapidly spreading oedema with induration and a small area of gangrene. The boy appeared very sick. He seemed languid stupid and tired and his temperature was 99.5 degrees F. On the following day his temperature was a little higher and the gangrenous process in the eye had progressed rapidly. The eye was removed under general anaesthesia. On the same morning anthrax bacilli were found in smears. The boy recovered. The source of the infection was found to be the wool in a base ball glove which the patient had received as a prize.

VIRGIL WESCOTT M.D.

Woods A. C. Protein Therapy—Specific and Non-Specific—In Ophthalmology. *Arch Ophth* 1923 lvi 483

There are four phases of specific therapy in ophthalmology viz the use of (1) tuberculin (2) bacterial vaccines and their derivatives (3) uveal pigment in sympathetic ophthalmia and (4) lens protein in diseases of the lens. In the diagnostic use of tuberculin the object is to determine the presence or absence of an unusual degree of tuberculin hypersensitivity without causing a focal reaction in the eye.

Autogenous vaccines have not proved of much value except possibly in cases of furunculosis of the lids and blepharitis. Recently the antiviral of staphylococci and streptococci has given brilliant results.

In active sympathetic ophthalmia there is hyper-sensitivity to uveal pigment and pigment therapy appears to be of very definite value.

The status of lens protein therapy is highly controversial. Much is now known about lens substance but very little about the therapeutic administration of lens protein. Non-specific protein therapy in the form of milk, anti diphtheria serum and typhoid vaccine has been employed extensively of late but such treatment is specialized. The choice of protein and the dosage must be governed by the reaction desired, the condition of the inflammatory lesion and the patient's general condition.

VIRGIL WESCOTT M.D.

Hill E. Tuberculosis in Relation to the Eye.

*Soc th A C J* 1928 xvi 607

Woods A. C. and Rones B. The Therapeutic Use of Tuberculin in Ocular Tuberculosis. *Soc th A C J* 1928 xvi 613

HILL states that tuberculosis may occur in any tissue of the eye in an otherwise apparently healthy person free from indications of tuberculosis elsewhere

in the body. Tuberculin if properly used aids in the healing process. These facts are so little appreciated by those who make the general study of the patient in collaboration with the specialist that active co-operation between the internist and ophthalmologist is often limited.

WOODS and RONES report their experiences with tuberculin used as a diagnostic and a therapeutic agent.

The patient is examined thoroughly for tuberculous and non tuberculous lesions elsewhere in the body and if any such lesions are found they are treated first. The intracutaneous tuberculin test is employed 0.001 mgm. O.T. being used as the initial dose. If necessary the dose is increased to 0.1 mgm. For treatment a broth filtrate is used. Beginning with 0.000 000 1 mgm. the dosage is gradually increased until about 60 mgm. can be given without causing a reaction.

Of forty-two patients treated in this way 20 per cent showed systemic evidences of tuberculosis 40 per cent showed evidence of other foci of infection 25 per cent had definite recurrences of the ocular disease after initial healing 45 per cent appeared healed 45 per cent showed definite improvement and 10 per cent showed no improvement. None of the patients died.

While improvement in the clinical picture may be expected early, true healing requires a rather long time.

The early injections must be minute and during treatment the eyes must be under constant observation while the local reaction determines the dosage.

VIRGIL WESCOTT M.D.

Zimmerman E. L. The Role of the Arsphe-namines in the Production of Ocular Lesions. *Arch Ophth* 1923 lvi 99

Zimmerman states that following the administration of arsphe-namines three types of ocular reaction may occur.

1. A direct toxic effect of the drug on the normal eye. The only true toxic reactions involving the normal eye occur in the form of conjunctival hyperemia. Such reactions may damage vessels already involved by cardiovascular and renal disease but there is no evidence that a normal vessel nerve or retina is ever affected.

2. Jarisch Herxheimer reactions in the form of an intensification of an active lesion, the activation of a quiescent lesion or changes in structures previously presenting no clinical evidence of a pathological process.

3. Neurorecurrences and indorecurrences or ocular lesions following insufficient treatment of primary or secondary syphilis with the arsphe-namines. In resuming activity the surviving organisms encounter a defenseless host and the resulting reaction is a marked one producing a neurorecurrence in the form of an optic neuritis, paralysis of the internal or external ocular muscles or an indorecurrence.

VIRGIL WESCOTT M.D.

Howard H J The Intravenous Use of Typhoid Paratyphoid Vaccine in Eye Diseases *Am J Ophth* 1928 xi 35 685

Howard reports cases of ocular disease in which intravenous injections of typhoid paratyphoid vaccine gave excellent results. The injections were beneficial only when they were followed by fever. Contra indications to the treatment are (1) a temperature more than  $1\frac{1}{2}$  degree C above normal (2) low vitality (3) any condition in which the added strain occasioned by a protein shock might not be well borne by the heart. LAMAN A COPPS M D

Hagedoorn A The Early Development of the Endothelium of Descemet's Membrane the Cornea and the Anterior Chamber of the Eye *Brit J Ophth* 1928 xi 479

The author points out that there is no reason why we should assume that the formation of the structures of the anterior chamber in man is different from their formation in the higher animals. In several of the higher animals the corneal epithelium is the first structure anterior to the lens to be definitely differentiated and even in very young embryos it has a basal membrane. Between it and the lens an anterior vitreous has been definitely established. The latter is ectodermal in origin springing from the basal cones of (1) the epithelium of the lens (2) the margin of the optic cup and (3) the surface ectoderm.

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Grove states that persons who have sustained an injury of the head should be examined as soon after the accident as possible and at regular intervals over a considerable period of time.

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Most injuries to the head in civil life are caused by a broadly acting force which compresses the skull

with or without causing fracture. This compressing force results in damage to the brain the cerebrospinal fluid and the vascular system of the blood as well as to the skull.

In the skull the compressing force of the injury finds its greatest expression at the base because of the more or less unequal strength of the constituent parts of this portion. The middle fossa being weaker than the anterior or posterior fossae is most often affected. The pyramid weakly attached in the middle fossa takes the brunt of the injury to the base and is frequently damaged.

Fractures of the temporal bone are divided into transverse fractures longitudinal fractures and avulsion of the tip of the petrous temporal bone. The longitudinal fractures are the most numerous. The labyrinth is damaged by the concomitant concussion and the fracture usually involves the middle ear and external canal. Transverse fractures cross the pyramid at right angles and completely destroy both the vestibule and the cochlea. Avulsion of the tip of the petrous bone is relatively rare.

The damage to the brain is caused by compression of the brain beneath the point of impact and at a point directly opposite. The damage done by the cerebrospinal fluid is caused by the compression of the lateral ventricles which sets the fluid in motion to expend its force in a whirlpool action in the fourth ventricle. The damage to the blood vascular system consists in a state of traumatic paralysis of the vasoconstrictors with resulting stasis of the circulation in the brain tissue particularly in the central vestibular area and probably also in the labyrinth.

In the temporal bone the chief findings at autopsy are hemorrhages. The intralabyrinthine hemorrhages are always perilymphatic unless the capsule of the labyrinth is fractured in which case they may be also endolymphatic. The region most frequently affected by these intralabyrinthine hemorrhages is the scala tympani in the vicinity of the round window. The nerves may be torn or damaged by pressure from hemorrhage before their entrance into the pyramid within the porus acusticus internus or in the narrow bone canals leading to the end organ.

The pathological changes in persons dying years after an injury to the head are atrophy of the nerve fibers atrophy of Corti's organ which is most marked in the basal coil and complete or partial filling of the inner ear spaces and canals with hyaline connective tissue and bone.

The results of experimentation on animals show that the effects of mild injuries are the same as though less marked than those found at autopsy in the temporal bones of human beings namely hemorrhage in the inner ear most marked in the basal coil of the cochlea and in the region of the round window always in the perilymph spaces and never in the endolymph spaces. Degenerative changes are seen also in the nuclear territory of the eighth nerve in the floor of the fourth ventricle affecting mainly the small cells of the nervus tri-

angularis the nucleus of von Bechterew the tuberculum acusticum and the posterior corpora quadrigemina. These changes are probably due mostly to vasomotor disturbances in this section producing stasis with subsequent destruction of tissue.

Hemorrhage from one or both ears occurred in nine of the cases reviewed. The author regards this as almost indisputable evidence of a longitudinal fracture of the temporal bone. It does not mean however that great damage to the function of the ear will necessarily ensue.

A cardinal symptom of injury of the vestibular system is vertigo. The vertigo is vestibular in origin if it has a rotary quality if it comes on in attacks accompanied by nystagmus or if it is produced by bending movements of the head. Other types of vertigo after injuries to the head are apt to be neurotic especially if they are constantly present after the first two weeks or are accompanied by severe nausea vomiting and great mental excitement. The author is always strongly suspicious of a neurosis if the patient complains of constant headache and vertigo after the first week or two following the injury.

Spontaneous nystagmus is another cardinal symptom of vestibular injury. It is unilateral or bilateral and if bilateral is more marked on one side. It is always rotary horizontal in character. The author attributes it to a decompensation between the two vestibular systems. Bilateral nystagmus to the two sides is often seen in normal persons but is always of the purely horizontal type always equal in intensity not associated with vertigo and never influenced by the head movements test. The author has been unable to formulate any rule for the direction of the vestibular nystagmus in his cases.

Disturbances in the pointing reaction were present in twenty eight of forty two cases and constitute a part of the spontaneous vestibular symptoms which occur after damage to the vestibular system. Not much reliance can be placed upon them in deciding which side is involved. This is true also of the filling and Romberg reaction.

The irritability of the labyrinth to caloric stimulation was studied in thirty cases all of which presented spontaneous labyrinthine symptoms. Normal reactions were found in ten cases hyporritability in eleven cases and hyperirritability in nine cases. The irritability of the two sides was equal in twelve cases and unequal in eighteen cases. In the author's opinion a difference in the irritability of the two sides in other words a decompensation between the two labyrinths is of far more importance in the production of the spontaneous labyrinthine symptoms than hyperirritability or hyporritability.

The Rinne reaction was positive in thirty five cases negative in one case and not recorded in six cases. Bone conduction was shortened in twenty four cases normal in six and not recorded in twelve. Traumatic deafness caused by injury of the head was found in thirty one of forty two cases. Complete deafness in one ear was present in one case.

In a large proportion of the case the defect in the hearing was bilateral and a large number of the cases showed the upper tone range more affected than the lower and middle ranges. Of the thirty one patients with defective hearing twenty eight had symptoms referable to the vestibular apparatus.

JAMES C. BRASWELL M.D.

**Fowler E. P. Marked Deafened Areas in Normal Ears.** *Arch Otol. yngal.* 1928 viii 151

The author has frequently noticed a marked dip in the curve of the hearing graph between 1,000 and 5,000 cycles as depicted by audiometer readings in otherwise normal ears. From this observation he concludes that in many otherwise normal ears marked deficiencies of hearing limited to one two or two and a half octaves of the scale may occur irrespective of any detectable defects in the conduction apparatus.

Four possible causes are: (1) a limited central or cortical lesion in an area governing these frequencies; (2) a nerve fiber defect of the section of the basilar membrane which normally detects these frequencies; (3) a defect in the terminal nerve apparatus; and (4) an anti resonance somewhere in the conduction mechanism. In the author's opinion the latter two are probably of most importance.

MANFORD R. WALTZ M.D.

**Stewart J. P. The Histopathology of Mastoiditis.** *Proc Roy Soc Med Lond* 1928 xxi 1743

In his discussion of mastoiditis Stewart includes not only inflammation of the pneumatic cells in the mastoid bone proper but also all extensions into neighboring bones.

The initial change in the directly infected zone is a local rise in the blood pressure causing a dilatation of the vessels in the haversian systems and hyperemia of the mucous endosteum.

The next stage is characterized by osteolysis in the haversian systems.

The third stage is the period of active rarefaction of the bony wall of the pneumatic space by osteoclasts and perforating vessels. This is due to the new pressure conditions.

The fourth stage consists in the regeneration of destroyed tissue by new bone formation.

The whole inflammatory process is subject to phase change which may alter it from a condition of resolution with an increase in the intravascular pressure into a more proliferative condition.

Both the disease and the regenerative processes progress from within outward.

JAMES C. BRASWELL M.D.

## NOSE AND SINUSES

**Figli F. A. and Thompson L. Rhinoscleroma.** *J. Clin. Med.* 1928 xvi 637

The authors report six proved cases of rhinoscleroma examined in the Mayo Clinic during the past eight and a half years together with the find-

ings of bacteriological studies made in three of them. Included in the group is probably the only case of this disease in a native-born American which was diagnosed during life. The patient a young man of Slavic parentage has never been outside the United States. In all of the cases the diagnosis was based on the history and clinical findings and was confirmed by biopsy and demonstration of the Frisch bacillus.

With the use of radium and deep roentgen ray therapy marked improvement was noted even in patients in whom the disease had progressed to the stage of sclerosis. The radium applications were made externally over the affected area and also in direct contact with the diseased tissue. In two cases it was necessary to open the trachea on account of the laryngeal obstruction caused by the local involvement.

When last observed four of the six patients were entirely free from clinical evidence of the infection. One patient who was apparently suffering from bronchial involvement at the time of examination later succumbed to the disease. Another patient could not be traced.

In the bacteriological investigation three freshly isolated strains of the bacillus rhinoscleromatis were studied according to the manual of methods of pure culture study prepared by the Society of American Bacteriologists. Contrary to certain reports in the literature these strains were as nearly identical as could be expected of three separate strains of the same species. After six months on artificial media the culture showed variation in sugar fermentation but on isolation only acid was produced in dextrose maltos mannite saccharose levulose galactose xylose arabinose dextranose monite salicin glycerol and trehalose. There was no change in lactose inulin raffinose or dextrin. It appears that the species is best identified by sugar fermentation as all other cultural characteristics are those of the genus.

**Turner A. L. and Reynolds F. E. Acute Suppuration in the Accessory Sinuses. Cavernous Sinus Thrombosis. Acute Leptomenigitis. Death Autopsy.** *J. Laryngol. & Otol.* 1928 xlviii 565

To illustrate infection of the intracranial structures by direct extension through the bone the author reports a case of antrum ethmoid and sphenoid infection with direct extension through the ethmoid and sphenoid walls. This infection resulted in a leptomenigitis and cavernous sinus thrombosis as shown by autopsy and microscopic section.

MANFORD R. WALTZ M.D.

**Skellern R. H. Chronic Ethmoiditis.** *Brit. M. J.* 1928 ii 562

**Howarth W. The Conservative and Surgical Treatment of Chronic Ethmoiditis.** *Brit. M. J.* 1928 ii 563

SKELLERN divides chronic infections of the ethmoid roughly into the suppurative and the non sup-



purative types. Those of the first type are characterized by a purulent secretion with a more or less wide spread catarrhal inflammation in the ethmoidal region and those of the second type by polypoid hypertrophy or true polyp formation. In some cases a combined form occurs. The author gives also a more exact classification and discusses the various types in detail.

Suppuration in one or more of the anterior cells is not an entity except in cases of purulent infection of the lining membrane of the bulla ethmoidalis. The posterior cells are more frequently the site of chronic disease. These cells are larger and more numerous. Their drainage can be easily interfered with by slight swelling of the nasal mucosa. The combined type of infection involving both the anterior and the posterior cells is usually the direct sequela of an acute infection or a series of acute inflammatory disturbances.

In the hyperplastic type of ethmoiditis the ethmoidal mucosa undergoes hyperplastic changes ranging from slight degeneration of a small portion of the lower border to the formation of sessile polyps.

The basic treatment of all sinus infections and particularly those in which the ethmoid is involved is aeration and drainage. Skullern emphasizes the importance of conservatism in operative measures. In the mildest cases of the suppurative type removal of the middle turbinate combined with treatment by medicated tampons is often sufficient.

Complete extirpation is indicated when there is combined suppuration affecting the entire labyrinth. The permanent ablation of polyps in hyperplastic ethmoiditis depends upon several factors. The localized hyperplasia or separate polyps are usually removed with the snare. The bony attachment should also be resected.

Complete knowledge of the regional and surgical anatomy is necessary. In the author's opinion the intranasal operative route to the ethmoid is the best and safest.

HOWARTH states that no two ethmoids are alike. Two clinical types of chronic ethmoiditis are recognized: (1) chronic catarrhal inflammation (polypoid degeneration) and (2) chronic suppurative inflammation.

Polyps are to be regarded as the product of hyperplastic inflammation of the covering of the ethmoid bone. Similar changes may be present in neighboring tracts of the ethmoidal mucosa. In some cases the polypoid formation is due to primary disease of the mucous membrane covering the ethmoid. This is the simplest condition. In its early stages it may yield to the use of astringent solutions and the removal of the polypoid hypertrophy.

Usually however the cases are not seen until the inflammatory process has spread into the ethmoid cells. The chief aim then should be to obtain free aeration and drainage. The removal of the diseased middle turbinate is indicated. In some cases a cure will result from this procedure alone but as a rule more radical treatment is necessary.

In the chronic suppurative variety of ethmoiditis polyps are usually absent. A conservative attitude should be adopted. In some cases removal of the middle turbinate followed later by a limited more extensive removal of the diseased area will result in cure.

In the author's opinion complete extirpation of the ethmoid cells is accomplished best by external operation. In obstinate cases this procedure gives a higher percentage of cures than any other treatment.

W. M. PARON, M.D.

## PHARYNX

Yates A. L. Methods of Estimating the Liability to Postoperative Haemorrhage from Unstuffed Wounds (Following Tonsillectomy). *Proc Roy Soc Med Lond* 1925 vol 184.

Postoperative haemorrhage from unstuffed wound in which the arteries have not been ligated occurs in two groups of cases. The first group in which the origin of the bleeding is arterial includes: (1) cases in which an artery bleeds not at operation but afterward on the patient's recovery from shock; (2) cases in which an artery bleeds on the patient's recovery from deep anaesthesia (chloroform mixture) tend to produce this type of bleeding; (3) cases in which bleeding from an artery ceases at operation because of the decrease in the blood volume but begins again when the blood volume is made up by the tissues after the operation.

The second group in which the bleeding is of capillary origin and due to deficient clotting time of the blood includes: (1) cases in which the clotting time previous to operation may have been normal but operation is followed by a compensated acidosis; (2) cases in which the clotting time was prolonged before the operation allows excessive haemorrhage during the operation and favors the occurrence of secondary haemorrhage.

In cases of compensated acidosis in which the clotting time is much prolonged the clotting time can be restored to normal by the administration of sufficient alkali to neutralize the urine. In the cases of adults the author gives one teaspoonful of sodium bicarbonate in a glass of water twice a day.

W. M. PARON, M.D.

## NECK

Joslin E. P. and Lahey F. H. Diabetes and Its perthyroidism. *Am J Med Sc* 1928 clxxxv.

The authors state that hyperthyroidism and diabetes show many similarities. When these conditions are associated even minor slips in treatment otherwise without consequence will quickly result in disaster.

In disease of the thyroid which lead to glycosuria hyperthyroidism is the fundamental factor. This is evident from the fact that glycosuria was present before or after operation in 38.6 per cent of cases of primary hyperthyroidism and 27.7 per cent of cases of secondary hyperthyroidism whereas in

a series of surgical cases without hyperthyroidism it was present in only 13.6 per cent.

In hyperthyroidism there is also a slight tendency toward hyperglycemia. Therefore for the diagnosis of diabetes in hyperthyroidism the authors have raised the standard to a blood sugar of 0.15 per cent in the fasting state or 0.20 per cent or more after meals in addition to glycosuria.

Of the authors' 75 cases of hyperthyroidism with diabetes heredity was a factor in 20 per cent. The hyperthyroidism usually precedes the appearance of the diabetes though this is not easy to demonstrate. According to statistics in the literature the hyperthyroidism precedes the diabetes in 85.5 per cent of the cases of primary hyperthyroidism and in 51.9 per cent of the cases in which the hyperthyroidism is secondary.

In persons with thyroid disease diabetes is twice as frequent as in persons with surgical conditions without hyperthyroidism but much less frequent than in those with pituitary disease. Frank diabetes was present in 2.45 per cent of the authors' cases of primary hyperthyroidism and 4.47 per cent of their cases of secondary hyperthyroidism.

The feeding of thyroid gland to normal animals has sometimes resulted in a lowering of the assimilation of glucose and a decrease in the quantity of glycogen stored in the liver. Conversely thyroidectomy on normal animals increases the tolerance for carbohydrates and leads to hypoglycemia.

The findings with regard to changes occurring in the pancreas in thyroid disease are contradictory. In 6 of 10 cases of Basedow's disease which came to autopsy, Holst found the pancreas reduced in size or the islands of Langerhans reduced in number or altered in structure. Kojima and Hoshimoto reported hypertrophy of the pancreas after thyroid feeding whereas other investigators have noted hypertrophy of the islands of Langerhans after thyroidectomy.

In the authors' cases of diabetes with primary hyperthyroidism the average age at the onset of the diabetes was forty and five tenths years and in those of diabetes with secondary hyperthyroidism it was forty seven and eight tenths years whereas the average age of onset of diabetes without hyperthyroidism is forty three and eight tenths years.

The majority of the authors' thyroid diabetes cases were females—a fact in accordance with the greater incidence of hyperthyroidism in females than in males.

The diabetic over forty years of age is usually overweight. Of the authors' diabetics with hyperthyroidism 83 per cent were overweight.

In 600 fatal cases of ordinary diabetes since the introduction of insulin the average length of life after the beginning of the disease was seven and seven tenths years. In 12 fatal cases of diabetes and primary hyperthyroidism it was three and four tenths years and in 6 fatal cases of diabetes and secondary hyperthyroidism it was four and one-tenth years.

In 33.3 per cent of the cases of diabetes with primary hyperthyroidism the cause of death was diabetic coma.

Before operation the patients with diabetes and primary hyperthyroidism showed an average basal metabolic rate of +61 per cent whereas in 1,000 cases of uncomplicated primary hyperthyroidism the basal metabolic rate before operation was +49 per cent. After the operation the basal metabolic rate of the thyroid diabetics fell to +7.4 per cent whereas in the cases of uncomplicated hyperthyroidism it fell to +5.7 per cent.

In diabetic patients with adenomatous goiters and hyperthyroidism the average basal metabolic rate before operation was +44 per cent whereas in similar cases without diabetes it was +41 per cent. After operation it fell to +10 per cent in the former and +9 per cent in the latter.

In the cases of diabetes with primary hyperthyroidism the gain in weight after operation averaged 21 lb. whereas in cases of diabetes with secondary hyperthyroidism it averaged 13 lb. In cases of uncomplicated primary hyperthyroidism the average gain twelve months after the operation was 24 lb. and in cases of adenomatous goiter with secondary hyperthyroidism it was 14 lb.

In persons belonging to the Jewish race who are prone to diabetes the incidence of diabetes with hyperthyroidism is no higher than in others.

The treatment of diabetes with hyperthyroidism consists in regulation of the diet and the administration of insulin and Lugol's solution. In the authors' cases the carbohydrate was maintained at about 100 gm. and the protein at approximately 1 gm. and the total calories at not far from 30 per kilogram of body weight. Insulin was given in small doses—usually 5 units 3 or more times a day—and if prompt response to diet and insulin did not occur the insulin was increased to 10 units at a dose and was given more frequently.

Food was given within three hours before the operation but usually this did not exceed 20 gm. of carbohydrate in the form of oatmeal gruel, orange juice or ginger ale. The dose of insulin before operation was too small rather than too large. The quantity of Lugol's solution given before operation was 10 minims 3 times a day for eight or ten days and 20 minims 3 times a day the day before operation. After the operation 10 minims were given 3 times a day for about eight days and then 10 minims were given weekly for three months.

Intravenous infusions of glucose with normal saline solution were given when severe reactions occurred or were anticipated.

In 37 of the 43 cases of primary hyperthyroidism 64 operations were performed. The operative mortality reckoned on the basis of the number of operations was 1.56 per cent and reckoned on the basis of the number of patients 2.7 per cent.

In the cases of 26 of 28 patients with secondary hyperthyroidism 39 operations were done with an operative mortality of 5.1 per cent reckoned on the

basis of the number of operations and 7.7 per cent reckoned on the basis of the number of patients.

Cure of the diabetes did not occur after the operations but as a rule there was a gain in tolerance for carbohydrate.

In 8 of the authors cases of hyperthyroid diabetes the diabetes developed after an operation for hyperthyroidism. Therefore the hyperthyroid patient who has been operated upon should be warned of the possibility of developing diabetes later even though the disease may not be so apt to appear as if he had not been operated upon. Progressing longevity increases the incidence of diabetes in the community and progressing longevity of the hyperthyroid patient brought about by operation may also be a factor in that it brings him into the diabetic age zone the onset of the disease occurring most frequently in the fiftieth year of age in the cases of females and the fifty first year in the cases of males. The authors believe however that the hyperthyroidism also plays a part.

I S MODERN MD

Thomson Sir StC Intrinsic Cancer of the Larynx Operated upon through a Laryngofissure *Proc Roy Soc Med Lond* 1932, 1792

Laryngofissure gives an excellent result in intrinsic cancer of the larynx. The author reviews seventy cases. Thirty four of the patients are still living from three to nineteen years after the operation. Eighteen died from causes other than recurrence and three died as the result of the operation. Eleven of the patients developed malignant disease elsewhere including glands in the neck. Most of the recurrences appeared within the first year. When a recurrence develops in a borderline case laryngectomy is indicated. In subglottic cases with fixed cord the prognosis is unfavorable.

The patient should be given careful pre-operative preparation. The operation may be done under local or general anaesthesia but deep general anaesthesia should be avoided. No atropin morphia, or similar drugs should be used.

W M PATON MD

# SURGERY OF THE NERVOUS SYSTEM

## BRAIN AND ITS COVERINGS CRANIAL NERVES

Fagleton W P Traumatic Lesions of the Head and Their Relation to the Ophthalmologist  
*J Med Soc N J* 1923 111 507

The author advocates for every general hospital a Department of Cranial Surgery with a Chief and Associate both expert ophthalmologists and a technician trained to determine visual fields and conduct neuro aural examinations

In cases of head injury the degree of cerebral trauma and not the skull fracture is of chief importance The three types of cerebral damage are (1) laceration (2) internal hemorrhage and (3) external hemorrhage or evulsa Of these only the last calls for surgical intervention

The traumatic cases are divided into six clinical groups namely those with (1) extradural hemorrhage from the middle meningeal artery characterized by a lucid interval (2) subdural hemorrhage with a continuous headache and often papilloedema (3) successful extradural subdural and intracerebral hemorrhages from repeated traumata (4) subdural hemorrhage with secondary oedema characterized by more or less delirium (5) compound fracture of the skull and (6) traumatic encephalitis without fracture of the skull increased intracranial pressure or papilloedema

Middle meningeal hemorrhage calls for immediate exposure of the artery by subtemporal decompression performed with a drill and rongeurs not chisels To prevent injury to the arachnoid cells subdural clots should be washed away gently and not forcibly lifted out Subdural hemorrhage with secondary oedema if not too extensive can be controlled by repeated lumbar punctures or the administration of magnesium sulphate by rectum A compound skull fracture must be converted into a simple fracture as soon as the patient has recovered sufficiently from the shock to withstand the operation but not before thorough debridement is essential within eight hours All devitalized and infected tissue and loose bone fragments should be removed In cerebral compression immediate surgical interference is indicated when there is increasing unconsciousness with a rising systolic pressure a falling diastolic pressure and a progressively increasing pulse rate with later papilloedema

Basal fractures are usually considered inoperable with the exception of those which go through the petrous bone and are associated with hearing from the ear and early signs of meningitis and those with definite fracture into a frontal sinus In cases of fracture through the temporal bone with suppuration in the ear recovery results in 90 per cent and

death occurs in only 8 per cent if proper treatment is given Twenty five per cent of all injuries of the frontal sinuses result in death from meningitis hence this type must be operated upon at once All infective tissue must be removed and any communication between the cerebral tissue and the nose closed with skin or fascia In cases of fractures through the orbital roof with intraocular blindness without ophthalmoscopic changes operation should be performed from above and the orbital space decompressed in order to prevent subsequent optic atrophy A traumatic encephalitis without signs of increased pressure does not call for surgical interference

All operations upon adults should be done under local anaesthesia Repeated coughing if the dura is opened will often greatly assist in the extrusion of foreign material from within the brain

ALBERT S CRAWFORD M D

Dandy W E Arteriovenous Aneurism of the Brain  
*Arch Surg* 1928 511 190

Arteriovenous aneurisms may be divided into 4 main groups (1) the traumatic which do not occur in the brain (2) the congenital a large group in which there is a communication between an artery and a contiguous vein by one or more aberrant vessels of which probably due to an error of vascular development in the embryo (3) those in which the arteriovenous communication is established through the medium of a mass of abnormal vessels which has been erroneously called an angioma and (4) the vascular tumors known as angioma cavernosum which seem to be the result of maldevelopment from the embryonic vascular anlage

Many terms have been applied to these vascular dilatations and communications Kienboff suggested classifying them simply as venous arterial and arteriovenous aneurisms This would include all of the types described

The first arteriovenous aneurism of the brain was reported by Steinheil in 1895 Dandy has collected 2 definite cases from the literature He excluded several of those reported because they did not have all of the essential symptoms or findings namely marked fullness and enlargement of the veins of exit and increased size and tortuosity of the artery entering the mass of vessels At the Johns Hopkins Hospital arteriovenous aneurism of the brain was found in 2 of 600 cases of verified brain tumors seen during a period of five years The incidence of the condition in neurological clinics is given as from 0.5 to 1 per cent

The author reports 8 cases in detail with drawings of the lesions The patients were males ranging in age from fourteen to fifty two years In

4 the lesion occurred on the right side and consisted of a communication between branches of the middle cerebral artery and the Rolandic and Sylvian veins. In 1 case the lesion was on the right side but more posterior and seemed to be connected with a similar lesion of the scalp in the temporo-occipital area. In 2 cases the aneurism was in the left parietal region and was similar in type and location to the aneurisms in the first 4 cases mentioned. In 1 case the lesion was occipital and involved the left vertebral artery.

The duration of the symptoms range from four months to fifteen years. All of the patients had convulsions except the one with a cerebellar aneurism. Four showed no signs or symptoms of pressure but presented focal symptoms. The X-ray revealed changes in 3 cases. In 2 cases there was papilloedema. Ventriculography was of aid in diagnosis in 2 cases and of aid in craniotomy in 2 others. The diagnosis before operation was tumor in 4 cases, tumor or aneurism in 2 and aneurism in 2.

In every instance operation showed a definite communication between an artery and adjacent large dilated veins. The veins pulsated and carried arterial blood and as a rule a venous thrill could be felt. In 2 cases an attempt was made to extirpate the lesion but both of the patients died from hemorrhage. Two patients who were treated by ligation of the artery of entrance showed marked improvement. 1 of these had a temporary hemiplegia. In 2 cases ligation of the internal carotid artery was followed by cure.

Of the total number of 30 cases reviewed 60 per cent were those of males. In 44 per cent the symptoms did not appear until after the age of thirty years and in 30 per cent until after the age of forty years. The duration of the symptoms ranged from a few hours to fifty years. The lesions were located in almost every part of the brain but an overwhelming majority were in the paracentral region and connected with a branch of the middle cerebral artery.

The histological appearance of the vessels comprising the vascular skein is varied. These vessels are usually large but may be small. Their walls are thick or thin. The intima may be narrow but frequently is greatly thickened. The elastic tissue layer is usually not well defined and the media is poorly developed. Thrombosis may be extensive. The vessel walls being inelastic may rupture as the result of the prolonged increased pressure.

Convulsions are the rule and in most cases are of the Jacksonian type. As a sequel there is usually a transient motor or sensory paralysis. Among other focal manifestations occurring at times are aphasia, hemianopsia and unilateral loss of sight, smell or taste. The possibility of an arteriovenous aneurism of the brain should be considered in the diagnosis of cases with a history of repeated motor or sensory involvement with little or no permanent progression over a number of years. Mental changes are infrequent. In some cases the heart is enlarged

but this is not common. In about 23 per cent of the cases increased intracranial pressure is evidenced by headache. Papilloedema is not common and diplopia is rare. Cerebral hemorrhage occurs frequently. 41 per cent of the deaths being due to this cause.

In the diagnosis the X-rays and ventriculography give definite aid.

The treatment is of two types: (1) ligation of the entering arteries with or without extirpation of the mass of vessels; (2) ligation of the internal carotid artery (for cerebellar aneurism) and of the vertebral artery (for cerebellar aneurism). Occasionally a subtemporal decompression may be indicated. Radical ligations or extirpations alone are curative but exceedingly dangerous to life and function and are indicated only in a minority of the cases.

ALBERT S. CRAWFORD, M.D.

Van Wagenen, W. P. The Incidence of Intracranial Tumors without Choked Disk. In *One Year's Series of Cases*. *Am. J. M. Sc.* 1923, clxvi, 346.

This article is a review of 365 brain tumor cases treated in Cushing's clinic in the period from October 1924 to November 1925 with especial attention to those without choked disk. One hundred and eighty-three of the cases were classified as verified, 81 as unverified and 101 as suspected. Of the 183 verified cases 27 were re-admissions. Of the 145 verified new cases 17 (11.7 per cent) showed no appreciable changes in the eye grounds. If we exclude from this number the pituitary adenomata, congenital cysts and suprasellar meningomata which are rarely associated with choked disk the percentage rises to 16.5.

Of the 81 unverified cases 9 (11.9 per cent) showed normal fundi. While these cases were not verified histologically the presence of a tumor was indicated by shadows in the roentgenogram suggesting calcification and by field defects, distortion of the ventricles and resistance to the exploring needle.

A review of the literature shows that in 18.5 per cent Jackson cited 3 cases without choked disks and since then numerous similar cases have been reported. In an analysis of 200 verified cases Paton found that in 20 per cent the fundi were normal at the time of operation or death. In a series of 63 cases Brain found normal fundi in 21.6 per cent. In the production of choked disk the size of the tumor is of secondary importance, the primary feature being interference with the cerebrospinal circulation due to the position of the neoplasm or oedema. Absence of choked disk does not mean absence of an increase in the intracranial pressure. In 50 per cent of the cases reported the presence of increased pressure was evidenced by hydrocephalus, flattening of the convolutions, protrusion of the brain after decompression or convolutional impressions on the skull.

Of 17 verified tumors without choked disk 6 were located in the posterior fossa, 3 were acoustic neuro-

mata 1 was an anomalous growth of the cerebellum 1 was a medullary tumor and 1 was a midline cerebellar tumor

Eleven tumors without choked disk were supratentorial. None was associated with hydrocephalus and none was very large although some of them caused ventricular distortion. Six were temporal or supramarginal. One was a parietal meningioma. 3 were parietal gliomata and one was a parasagittal glioma.

Of the unverified tumors without choked disk 6 (23 per cent) showed calcification. If the cerebellum is excluded the percentage is 30. Calcification is of considerable importance in the diagnosis of brain tumors. In a review of cases seen in Cushing's clinic over a five year period Van Dessel found calcification in 13.5 per cent of verified gliomata. In 3 unverified cases without choked disk field changes were found. The cases are reported in detail. It is interesting to note that in 1 case choked disk did not appear until the patient's third admission to the clinic probably seven or eight years after the onset of the disease.

GILBERT C. ANDERSON, M.D.

**Pancoast H. K. The Significance of Petrous Ridge Deformation in the Roentgen Ray Diagnosis and Localization of Brain Tumors. *Am J Roentgenol* 1928 27 201**

Of 227 proved brain tumors 65 were pituitary, 97 cerebral and 59 cerebellar or situated at the cerebellopontine angle. In the cases of pituitary tumor the roentgen ray findings were correct in 58 (89.2 per cent). In the 97 cases of cerebral tumors there was positive roentgen ray evidence of tumor in 55 (56.7 per cent). Twenty six of the cerebral tumors were localized roentgenologically. Of the 59 tumors in the posterior fossa tumors 30 (50.8 per cent) were demonstrated but only 2 were localized with the roentgen ray.

Extrasellar brain tumors are recognized roentgenologically from calcifications within the tumor mass, hyperostoses associated with meningiomata, shifting of the shadow of the calcified pineal gland and pressure effects. The pressure effects may be both general and local. Among the effects of a general increase in the intracranial pressure are atrophy of the convolutions, prominence of the sutures, thinning of the skull and atrophy of the posterior part of the sella. The local effects are localized atrophy of some part of the inner table or base of the skull due to direct pressure.

This article is concerned chiefly with deformities of the petrous portion of the temporal bone as a result of pressure.

The value of the occipital view is emphasized. A study of the petrous ridge in 117 roentgenograms of normal persons showed both sides to be regular and symmetrical in 108 (93 per cent). Irregularities occur more often on the right side. Very slight defects, especially if on the right side, should be disregarded but when there is clinical

evidence of an intracranial tumor a deformity of the petrous ridge is significant and a valuable localizing sign.

The author cites 6 cases in which this study was of aid in confirming the diagnosis and localizing the growth. In 1 instance the clinical examination indicated a tumor on the right side but the deformity of the petrous ridge was on the left and at operation the tumor was found on the left side. In another case in which there was a difference of opinion the operative findings confirmed the clinical findings.

It is probable that more than one factor is responsible for the localized bone atrophy. Probably direct pressure from a slowly growing tumor is of chief importance. When the atrophy occurs in the neighborhood of the internal auditory meatus the presence of an acoustic tumor is to be suspected. In addition to pressure direct infiltration of the bone by the tumor is responsible. Another factor is obstruction of the lateral sinus as by an angle tumor with resultant dilatation. After a long time bone changes may result from the pulsations transmitted to a tumor mass directly over the bone.

CHARLES H. HEACOCK, M.D.

**Cushing H. and Bailey P. Hemangiomas of Cerebellum and Retina (Lindau's Disease) with the Report of a Case. *Arch Ophth* 1928 144 447**

Cushing and Bailey, who have done so much to clarify our views on tumors of the glioma series are again pioneers in bringing before American physicians the brilliant work of the Swedish pathologist Arvid Lindau. In this article they give a brief review of Lindau's work and of the case reports in the literature before Lindau recognized the relationship between hemangioblastomata of the retina and cerebellum and other parts of the body such as the adrenals, kidneys, etc. They review also the cases of angiomas of retina recorded in the literature and report a case of Lindau's disease seen in their own practice.

The latter, the first case of Lindau's disease to be reported in the American literature, was that of a man forty years of age. At operation performed December 13, 1922, a cerebellar cyst containing xanthochromic fluid with a small mural tumor was removed. Prompt recovery followed. The hemangioblastoma in this case was first diagnosed as a vascular glioma.

In 1926 while the authors were engaged in a study of tumors arising from the blood vessels of the brain Lindau's monograph appeared. This caused them to restudy their eleven cases of hemangioblastoma. In all of their cases the tumor was located in the cerebellum. Five of the patients died. In the three cases in which an autopsy was performed no abnormalities were found elsewhere in the body (spinal cords and retina not examined).

The patient whose case is reported was the first of the six survivors to return upon request and was

the only one who had innumerable retinal tumors. The lesion is described in detail.

Because of the known familial tendencies of the disease additional facts were sought on the patient's readmission to the clinic. It was found that his father had died at the age of thirty six years in an attack thought to be due to the rupture of a cystic tumor of the brain which was called a sarcoma. Eight years previously his father's sister had died in a similar manner. Of the patient's two sisters one brother and eight children several have poor eyesight. One sister and all of the children have been examined but not one of them shows hemangiomatic changes of the retina.

LEO M. DWORR, M.D.

McLean A. J. The Route of Absorption of the Active Principles of the Posterior Hypophyseal Lobe. *Indor in Surg.* 1929 31: 40.

McLean titrated the oxytocic power of dialysates from the blood plasma of dogs, human beings and cattle (guinea pig's uterus checked qualitatively by melanophore tests on frogs) against pituitrin of known strength. He found presumptive evidence of the presence of pituitrin in the blood of these animals and that the concentration of this substance was greater in the external jugular veins than elsewhere in the body while the concentration in the cerebrospinal fluid was about equal to that in arterial blood.

He is therefore led to the conclusion that the absorption of the products of the posterior lobe of the hypophysis takes place primarily by way of the blood stream rather than by a transneuronal route.

LEO M. DWORR, M.D.

Reichert F. L. The Results of Replacement Therapy in an Hypophysectomized Puppy. Four Months of Treatment with Daily Pituitary Heterotransplants. *Indor in Surg.* 19 30: 451.

Reichert has repeated on a dog the work done by Smith on rats. His results although not so striking as those obtained by Smith were nevertheless indicative of the control possessed by the pituitary gland over growth and sexual function.

A female puppy six weeks old was hypophysectomized and allowed to go for six months untreated. During this period she failed to grow or mature physically or sexually as compared with a healthy litter mate sister.

When she was seven and one half months old replacement therapy by daily injections of fresh rabbits hypophysis was started. Congestion of the external genitalia occurred within forty eight hours and continued throughout the period of treatment which lasted four months. During this period the milk teeth were replaced by permanent teeth, the epiphyses closed and the coat changed from the downy coat of a puppy to that of an older dog.

The increase in size and weight was not striking but the author believes that this was due to his having delayed treatment for so long after the hypophysectomy.

LEO M. DWORR, M.D.

## SPINAL CORD AND ITS COVERINGS

Kubie I. S. and Fulton J. F. A Clinical and Pathological Study of Two Teratomatous Cysts of the Spinal Cord Containing Mucus and Callated Cells. *Surg. Gynec. & Obs.* 1928 47: 20.

The authors describe two very rare teratomatous cysts of the spinal cord containing thick egg white fluid full of ciliated epithelial cells. Both were successfully removed at operation. The first was found in a boy of two years who had been dragging his right foot since he first began to walk. The early symptoms were rather indefinite but eventually there were unequivocal signs of cord compression with spinal fluid block and the thick fluid containing ciliated cells was evacuated by laminar puncture. Removal of the cyst by laminectomy was followed by complete recovery.

The second tumor was found in a woman twenty seven years of age who since the age of two had had five sudden attacks of left hemiplegia with pain in the left cervical region and Brown Séquard dissociation of sensation in the trunk and extremities. The attack for which the patient entered the hospital caused respiratory embarrassment and almost complete quadriplegia with sensory disturbance at the level of the fourth cervical vertebra. The cyst removed at operation resembled that found in the first case but showed complexities commensurate with its greater age. Recovery resulted.

In discussing the pre operative and postoperative course in the second case the authors state that in the patient's last attack, as in the earlier ones, the paralysis developed first and persisted to rest on the left side although during the height of the condition it was the right side that showed the more profound loss of power. The left side showed from first to last the more marked reflex hyperexcitability. The etiological suggestion is that the right side suffered the more recent injury and hence manifested the flaccidity of spinal shock while on the left side there was presumably a condition of chronic impairment of the upper motor neurones spinal shock having long since passed off.

It was observed also in this case that painful sensations from the muscles, joints and tendons were preserved on the left side although the sense of position on this side was lost. However on the right side where the cutaneous sense of pain was diminished the pain in deeper structures was also diminished. Accordingly the fibers that mediate deep pain must run in close proximity to those mediating cutaneous pain. It was significant also that on the left side with normal cutaneous sensibility a high degree of posterior column ataxia was present.

Postoperatively the various sensory and motor functions returned in the reverse order from that in which they had disappeared. Throughout the patient's recovery motor functions returned more promptly than sensory functions. Of the sensory functions the slowest to return were the more

highly developed qualities of sensation such as that of the perception of light touch and the texture of materials. Pain returned more rapidly probably because it passes along fibers of small diameter which are less susceptible to compression.

LEO M. DAVIDOFF, M.D.

### SYMPATHETIC NERVES

Reid, M. R. Tumors of the Autonomic Nervous System. *Int. Surg.* 1928 LXXXVIII 516

The author reviews the tumors of the autonomic system which have been reported in the literature and classifies them as neuroblastomata, ganglioneuromata and paragangliomata. The neoplasms were found in the following locations: appendix 325, carotid body 111, suprarenal medulla 70, small intestine 17, stomach 2, central nervous system 18, cervical sympathetic chain 8, thoracic sympathetic chain 11, abdominal sympathetic chain 27, miscellaneous sites 21.

Neuroblastomata are malignant tumors apparently arising from the neuroblasts or undifferentiated cells from which the autonomic and chromaffin systems develop. They occur most frequently in infancy or early childhood and their site of predilection is the suprarenal gland. As a rule the primary growth is small. Metastases may be formed in the liver, lungs and lymph glands. The larger tumors and metastases are nodular masses of rather firm consistency. On section their cut surface is a glistering white with streaks of color due to local hemorrhagic degeneration. Microscopically they are alveolar in type and their characteristic cell are usually arranged rosette fashion about a central mass of fibers. Metastases seems to occur most frequently by way of the lymph stream. The diagnosis is difficult without biopsies.

Ganglioneuromata are benign tumors arising from ganglionic elements of the autonomic nervous system. They occur most frequently in female adults usually on the left side and most commonly in the central nervous system and its membranes and the great sympathetic chains. They vary from the size of a hen's egg to that of a child's head and grossly resemble fibromata. Microscopically they are reticular. The interstices contain medullated and non medullated nerve fibers intermingled with multipolar ganglion cells. Except in the very rare instances of malignant degeneration the symptoms are caused merely by the mechanical difficulties due to the size of the growth.

Paragangliomata are benign tumors arising from chromaffin tissue. They usually occur in adults and are found most frequently in the carotid gland and the appendix. Grossly they are nodular and of firm consistency and even texture. The cut surface varies from yellow to red. Microscopically they are alveolar and composed of polyhedral granular cells arranged in compact groups and surrounded by hyperplastic capillary endothelium. The symptoms caused by them are usually due to mechanical pressure.

The article is concluded with various tabulations of the author's case collections and a comprehensive bibliography.

ERIC OLDBERG, M.D.

Muller, G. P. End Results of Periarterial Sympathectomy. *Int. Surg.* 1928 LXXXV 474

Muller believes that some of the failures of periarterial sympathectomy may be attributed to the faulty selection of cases and that the operation will prove of particular value in the treatment of refractory ulcers of the extremities especially those due to trophic disturbances.

LEO M. DAVIDOFF, M.D.



# SURGERY OF THE CHEST

## TRACHEA LUNGS AND PLEURA

Hoot G W Problems In Bronchoscopy and Esophagoscopy *Ann Ot Rhinol & Laryngol* 1928 xxxvii 987

Bronchoscopy is indicated for diagnosis in cases with signs and a history pointing to the presence in a bronchus of a foreign body that does not show in the X-ray picture and in cases of lung abscess gangrene of the lung and bronchiectasis

Immediate bronchoscopy is necessary chiefly when an inhaled foreign body causes considerable respiratory embarrassment because of its large size or its shape or because it comes up against the undersurface of the glottis in such a way as completely to cut off the supply of air. In the ordinary case in which a foreign body has been inhaled careful and complete preparation for operation is usually possible. An inhaled peanut must be removed promptly as it causes a severe reaction.

Each type of bronchoscope and esophagoscope has certain advantages. The Bruening instruments can be used in smaller tracheae and bronchi than the Jackson instruments. On the other hand the Bruening instruments must be used largely by the sense of touch while the Jackson instruments can be used under visual control. The Jackson instruments require smaller and weaker forceps than the Bruening instruments. When it is necessary to cut the foreign body before removing it the Bruening instruments are to be preferred. A much larger foreign body may be removed through the Bruening instrument than through the Jackson instrument.

For the beginner lower bronchoscopy is safer than upper bronchoscopy. The danger from a tracheotomy is not great if ordinary surgical skill is used. If the foreign body is very rough and irregular tracheotomy should precede the bronchoscopy.

If general anesthesia is necessary it should be induced with ether. The anesthesia induced by nitrous oxide does not last long enough. Chloroform is too dangerous. In the cases of adults cocaine may often be employed to advantage if the patient is of the phlegmatic type. Solutions as strong as 25 per cent may be necessary.

When the neck cannot be extended tracheotomy can be done and the foreign body removed by lower bronchoscopy if the head can be rotated and the foreign body is in the trachea or a bronchus.

MERLE R HOON, M.D.

Weidtein I F and Herrmann L G Abscess of the Lung Experimental Studies in Chronicity *J Clin Exp Res* 1928 xvi 850

In experiments on dogs the authors found that lung abscesses could be produced at will by freeing

small artificial septic emboli into the venous circulation but they usually healed by cicatrization within three weeks.

In a second series of experiments they attempted by producing a chronic cough to cause abscesses more nearly simulating the chronic abscesses occurring in man. The cough was caused by subjecting the animal to inhalations of diluted free chlorine gas for a few minutes three times a day. It was found that by this method the duration of the abscess could be prolonged for a period of four or five weeks but no longer.

In another series of experiments anaerobic organisms were used. When these were introduced by the venous route abscesses of a greater degree of chronicity could be produced but when they were introduced by the intratracheal route abscesses were produced only when the entire bronchus was occluded. These experiments seem to indicate that the presence of certain anaerobic organisms is of importance in the production of chronic pulmonary abscesses. Whether these infectious agents reach the lung in man by way of the air passages or the blood stream is still unknown. Under experimental conditions however uninfected material must block the passage completely as well as injure the bronchi before an abscess is produced. This fact coupled with the observation that the arsenical drugs which kill spirochaetes will rarely if ever cure pulmonary abscess in man even though they alleviate the condition suggests that the anaerobic organisms are probably secondary invaders.

Undoubtedly the bronchiectatic type of abscess has its beginning in the bronchial tree. This is the type of lesion that follows the inhalation of a foreign body or grossly contaminated material which becomes lodged and occludes the finer bronchial ramifications. It responds readily to treatment when the foreign body or obstructing material is removed and the cavity is aspirated endoscopically.

RALPH B BERTHA, M.D.

Clerf L H Lung Abscess Following Tonsillectomy from the Standpoint of the Bronchoscopist *Am J Clin Res* 1928 xvi 911

Clerf emphasizes that because of the increasing number of reported cases of lung abscess complicating tonsillectomy it behooves every laryngologist to study his patients carefully before operation and to employ all possible prophylactic measures.

Whenever pulmonary symptoms develop following tonsillectomy the possibility of impending lung abscess should be immediately considered. The patient subjected to tonsillectomy should be discharged from observation until after three or four weeks.

In all cases of postoperative lung complications the examination should include an X-ray study

One of the most valuable methods of treating abscess of the lung following tonsillectomy is bronchoscopic aspiration carried out by an experienced bronchoscopist on the advice of the internist, roentgenologist and surgeon and in conjunction with such medical measures as may be recommended by the internist

In conclusion Clerf states that no patient with an incipient abscess of the lung has had the full benefits afforded by medical and surgical skill if bronchoscopy was not considered as a possible method of treatment in his case RALPH B. BERTMAN M.D.

Schall LeR. A. Primary Carcinoma of the Bronchi  
*Ann Otol Rhinol & Laryngol* 1918 xxvii 762

Primary carcinoma of the lung is by no means as rare as the textbooks suggest and it appears to be becoming more common. Whether the increase in its incidence is a true increase or due to more accurate diagnosis is problematical but the theory that the pulmonary trauma suffered during the influenza epidemic of 1918-1919 is responsible for an actual increase appears reasonable.

The tumors have three sites of origin: (1) the bronchial mucous membrane, (2) the bronchial mucous glands, and (3) the alveolar epithelium. Those arising from the bronchial epithelium are either squamous or cylindrical celled tumors, whereas those arising from the mucous glands are mainly adenomatous in structure.

Primary carcinoma of the bronchi is more common in males than in females and usually develops after the fortieth year of age. The symptoms are a cough, dyspnea, pain, hemoptysis, fever, and cachexia, which vary in degree and combination according to the size and location of the growth. The most constant symptom is cough.

In the differential diagnosis tuberculosis, pulmonary abscess, gangrene, cyst, foreign body, and aneurism must be considered. The condition is probably confused most frequently with tuberculosis.

Childs states that in the roentgen examination tuberculous masses are usually found in the posterior mediastinum while cancerous nodules are discovered

more frequently in the anterior mediastinum. Carman found that erroneously diagnosed cases fall into two groups: (1) those in which the lesion is mistaken for a mediastinal tumor, bronchopneumonia, gangrene, tuberculosis, cyst, or empyema, and (2) those in which the pulmonary tumor is latent and symptoms of extrathoracic metastases predominate. The diagnosis rests mainly on the findings of bronchoscopic examination. The bronchoscopic picture is that of bronchial occlusion, either by a tumor mass outcropping or stenosis due to infiltration of the bronchial wall with smooth bronchial mucosa.

Six cases of primary carcinoma of the bronchus are reported.

The author draws the following conclusions:

1. Primary carcinoma of the bronchus is not an extremely uncommon disease.

2. Patients with obscure chest conditions should have the benefit of the close co-operation of the thoracic surgeon, the internist, the roentgenologist, and the bronchoscopist.

3. Bronchoscopy is the best means of establishing an early diagnosis of bronchial malignancy.

MERLE R. HOOF M.D.

Smith R. E. The Etiology of Primary Lung Carcinoma. An Experimental and Clinical Investigation. *J. Cancer Research* 1918 xii 134

A study of forty-eight cases of primary human carcinoma proved by autopsy failed to reveal a definite etiological factor. In the author's experimental investigations, one group of mice were exposed to coal tar fumes, others were exposed to fumes from the exhaust of a Ford engine, and others were painted with gasoline over a period of five months. Carcinoma of the lungs did not occur in those exposed to the coal tar fumes, but developed in one (3.8 per cent) of those exposed to the exhaust gas and in one (3.4 per cent) of those that were painted with gasoline. This incidence was not markedly greater than the spontaneous occurrence of lung carcinoma. Neither the author's experiments nor his clinical observations gave any support to the theory that carcinoma of the lung is caused by exposure to the fumes of coal tar or gasoline.

NATHAN N. CROWN M.D.

# SURGERY OF THE ABDOMEN

## ABDOMINAL WALL AND PERITONEUM

Koontz A R. New Principles and Procedures in Hernia Repair. *Texas Stat J W* 1925 xiv 259

In experiments conducted at the Surgical Hunterian Laboratory of the Johns Hopkins Medical School the occurrence of union between muscle and fascia or ligaments was demonstrated by gross and microscopic findings. Further investigations revealed that if the muscle was stripped clean of all areolar tissue or if the edge of the muscle was cut the union was much firmer.

The studies of Gallie and LeMesurier with regard to the use of living sutures and of Nageotte with regard to dead grafts stimulated wider investigations. It was found that relatively large pieces of fascia which had been preserved in 70 per cent alcohol could be transplanted into living tissue. The dead cells of the graft were removed by wandering cells of the host. Fibroblasts from the host grew into the persisting connective tissue framework of the graft, a new circulation was established and in a short time it was impossible to distinguish the dead graft.

Applying the principles worked out in animal surgery the author has operated upon twenty six hernias in man using alcohol preserved strips of fascia lata of the ox as suture material and the technique advocated by Gallie and LeMesurier for living sutures.

Inserted fascial strips are not a suture material in the ordinary sense of the word. They are not absorbed as are ordinary absorbable sutures nor do they lie as an inert foreign body. The material becomes an integral part of the organism into which it is implanted. WILKINSON SHACKLETON M D

Waugh G E. The Clinical Aspect of Congenital Mesenteric Malformation in Children. *Proc Roy Soc Med Lond* 1918 xxi 177

Congenital malformations of the mesentery are definite morbid entities of a chronic type which may be recognized before operation by careful clinical and roentgenological investigation.

The syndromes to which they give rise do not resemble those of any of the well known abdominal surgical diseases nor any of the purely functional disabilities to which the term indigestion is applied.

The most important physical sign is the emptiness of the right iliac fossa associated sometimes with an asymmetrical enlargement of the abdomen on the left side. These signs follow of necessity inasmuch as the whole segment of the embryonic midgut is involved in a failure of rotation and fixation after reduction from the umbilical sac.

Operation may effect a cure and when it fails to do so may serve to reveal more accurately the character of the malformation so that a rational course of treatment may be adopted.

GEORGE A CHILLET M D

## GASTRO INTESTINAL TRACT

Fredet P and Lesné E. Hypertrophic Pyloric Stenosis in Infants. The Anatomical Result of Pylorotomy in a Patient Treated and Cured Three Months Previously. (*Sténose hypertrophique du pylore chez les nourissons. Résultat anatomique sur un sujet traité et guéri d'un mois*). *Bull et mé J Soc nat de chir* 1918 liv 1059

In the case reported typical symptoms of pyloric stenosis developed on the thirtieth day after the infant's birth and during the following eighteen days the child rapidly lost weight. A roentgenogram showed almost complete obstruction at the pylorus only a trace of the barium meal passing in twenty four hours.

At operation a very vascular firm olive-shaped tumor of the pylorus was found and incised in two places to the submucosa. The patient recovered but three months later died of influenza and bronchopneumonia.

In the gross specimen removed at autopsy no trace of the two longitudinal incisions could be seen. The pylorus was found slightly thickened but otherwise appeared perfectly normal.

Microscopic examination revealed two fine scars at the sites of the incisions. In numerous places however the scars were interrupted by the muscularis the continuity of which had been re-established.

The rapid healing of the pylorus raises the question as to the mechanism by which the Fredet operation can cure the stenosis permanently. It has long been recognized that the stenosis is physiological as well as anatomical. According to a plausible explanation recently advanced by Bard the contractions of the stomach are sufficient to overcome the pyloric sphincter under normal conditions but when there is hypertrophy a degree of retention occurs which tends to become progressively more severe. Therefore section of the sphincter acts by permitting re-education of the stomach the re-establishment of the co-ordination between the pyloric and the gastric phases of the motor function.

In the discussion of this report OMBREDI advised opening the abdomen by a subcostal incision made directly over the liver as this approach entirely eliminates the possibility of excoriation during or after the operation.

ALBERT I DE GROOT M D

Martin F and Burden V G. Pyloric Achalasia and Peptic Ulcer. *Ann Surg* 1928 LXXXVI 565

Pyloric achalasia is defined by Bristow as failure of the pyloric sphincter to relax. In the authors' opinion, spasm of the pyloric sphincter is responsible for chronic dyspepsia and ulcer symptoms in the absence of a gross ulcer and is a contributing factor in the development and chronicity of peptic ulcer. Pyloric achalasia is the failure of inhibition whereby the sphincter remains closed but not spastic; it is the result of a disturbance of the correlation between sympathetic and parasympathetic control. An important function of the sphincter of the pylorus is the control of duodenal regurgitation, an important phenomenon occurring during both digestive and interdigestive phases. The hydrochloric acid content of normal gastric juice is 0.5 per cent when the juice is freshly formed and for purposes of digestion is reduced to from 0.15 to 0.1 per cent.

All surgical procedures used in the treatment of peptic ulcer aim to reduce the acidity of the stomach. Partial resection of the stomach effects the most decided reduction in the gastric acidity and maintains low acid values because it removes large numbers of acid-secreting cells and favors the free regurgitation of the duodenal contents. Various methods of pyloroplasty have been practiced with varying degrees of success. Judd prefers excision of the ulcer combined with removal of the anterior half of the pyloric sphincter and completed as a gastroduodenostomy. Favrre and Shoemaker have advocated excision of the anterior half of the sphincter without opening of the submucosa.

The authors advocate the submucosal removal of the anterior half of the sphincter without opening of the mucosa. The sphincter is readily identified by the transverse veins. Tapping the pylorus causes the sphincter to contract. The veins above and below are ligated by catgut sutures on a curved needle which are left long for traction sutures. A transverse curved incision down to the mucosa is made with a sharp scalpel on the gastric side and also on the duodenal side of the sphincter. The sphincter is then cut across at its lower border, peeled from the mucosa and cut across at the upper border. The defect in the surface of the bowel is closed by a continuous suture of fine chromic catgut. Experimental operations on the dog have shown that this operation does not cause narrowing of the bowel at the site of the pylorus.

JOHN W. ACHESON, M.D.

Walton A J. Carcinoma of the Stomach. *Tr Am Surg Assn* 1928 X 419

The author does not accept the theory that cancer is increasing. During the past fifteen years he has operated upon 220 cases of gastric cancer. During the same period 1,080 patients were operated upon for chronic simple ulcer. In all instances the diagnosis was confirmed by macroscopic examination or visual inspection. A striking contrast between the number of cancer and ulcer cases operated upon

yearly is shown graphically. Whereas the number of cases of carcinoma remained nearly constant, a steady increase in the cases of ulcer was noted from year to year. In the cases reported during 1927 the ratio of ulcer to cancer was 3:1.

The relationship of cancer to ulcer of the body of the stomach is discussed. It is the latter type of lesion that is prone to become malignant. Walton states that in his present practice ulcers of the lesser curvature are 3 times as frequent as in 1913. He is of the opinion that the marked difference in the yearly increase of the two lesions can be attributed only to the cure of many ulcers by surgery.

With regard to the relationship of the conditions to sex, the author states that whereas both cancers and ulcers are much more common in males than in females, the difference is more evident in ulcers than in cancers.

Walton has reviewed the literature on the results of operation in gastric cancer. In a series of 651 cases of resection reported by Mayo, 38.6 per cent of the patients survived three years or more and 26.5 per cent survived five years or more. In contrast to these figures, Gibson reports that of 70 patients operated upon for gastric cancer, only 1 was alive after three years and only 2 survived after five years. Walton states that his results agree with those of Gibson. He is of the opinion that recurrence is due not to too conservative surgery but to the surgeon's inability to subject the patient to operation early enough.

Improved diagnosis lies the only hope of improving the results. When seen by the surgeon only one third of gastric cancers are operable. Cases of gastric cancer are often treated medically for long periods of time in the belief that the lesion is an ulcer. Moreover, many patients treat themselves especially when the symptoms are slight. Walton points out the great value of routine X-ray and test meal examinations in the cases of all persons over forty years of age who complain of persistent dyspepsia.

MORRIS A. SLOCUM, M.D.

Horsley J S. Cancer of the Stomach in Patients Over Seventy Years of Age. *Ann Surg* 1928 LXXXVI 554

During the past two and one half years the author performed partial gastrectomy for cancer of the stomach in five patients over seventy years of age. He used a modification of the Billroth I operation, approximating the upper stump of the stomach to the end of the duodenum after flaring open the duodenum by an incision about 1.4 in. long in the anterior wall. A 0.5 per cent solution of novocain was used for subcutaneous infiltration of the abdominal wall and for injection retroperitoneally about the head of the pancreas and to the left toward the vertebral arch above the pancreas.

Of the five patients all men, the oldest was seventy-seven years and the youngest seventy years of age. The average age was seventy-three years. The time required for the operation varied from two to

two and one half hours. None of the patients left the table with a pulse rate over 80. In four cases the cancer was very far advanced. In two resection of the transverse colon was necessary. In two cases in which the colon was anastomosed end to end a fecal fistula developed. Two patients gave a history suggestive of benign ulcer of the stomach. In the three other cases the cancer developed without previous gastric distress.

The first patient survived operation for nearly two years and died from a recurrence. The second developed postoperative pneumonia but recovered and survived for two years and three months finally succumbing to a recurrence of the cancer. The third patient lived eight and one half months after the operation and died from the effects of an intercurrent disease.

In the case of the fourth patient a man of seventy years a very extensive carcinoma was resected with a portion of the transverse colon and the round ligament of the liver. After the operation a fecal fistula developed but eventually closed. Microscopic sections revealed an adenocarcinoma of mild malignancy. A recurrence developed within a year after the operation. The fifth patient a man of seventy five years was subjected to gastrectomy for a very extensive cancer involving the lymph nodes of both the lesser and the greater curvatures of the stomach. Six days after the operation the wound was opened and the transverse colon found to be gangrenous for about 5 in. in the mid portion. Resection followed by end to end anastomosis was therefore done. The patient died a few days later with a colonic fistula.

The author believes that while the results cannot be regarded as brilliant the extensive operative procedure was justified by the several months of life accorded the four patients who survived.

JOHN W. NOZUM M.D.

**Eberts E. M.** Carcinoma and Ulcer of the Stomach. *Canadian M. Ass. J.* 1928 xiv 145.

During the past five years many important articles have been written on the relationship of cancer to peptic ulcer but the opinions expressed have been very divergent. Three questions are taken up.

1. Can a gastric cancer be converted into a gastric ulcer? A case cited by Thalheimer and Wlensky in which the malignant gastric tissue had been completely digested away though there were multiple metastases apparently answers this question in the affirmative.

2. What percentage of cancers of the stomach originate in peptic ulcer? Wilson and MacCarty say as high as 71 per cent whereas Eberts estimates from 5 to 10 per cent.

3. What percentage of gastric ulcers become cancerous? MacCarty reports that 68 per cent of the gastric ulcers in his series of cases were associated with cancer. According to Ewing the incidence of cancerous change in gastric ulcer is about 3 per cent. In Eusterman's opinion every ulcer is potentially a cancer.

The author believes that in every case of cancer of the stomach even if it appears inoperable on physical examination an exploration should be done and that in the absence of infiltration of the pancreas involvement of the transverse colon and metastasis in the liver resection should be undertaken.

Infiltration of the abdominal wall with a local anesthetic for the incision and after the abdomen has been opened infiltration of the root of the transverse mesocolon and gastrophrenic omentum along the lesser curvature at the junction of the fundus with the esophagus or the use of splachnic anesthesia will render it possible to perform resection without discomfort to the patient and without the risk of pneumonia from prolonged anesthesia.

PAUL W. SWEET M.D.

**Moise T. S.** Gastro Enterostomy with a Transverse Jejunal Incision. *Preliminary Clinical Report Surg. Gynec. & Obst.* 1928 xlviii 53.

Moise states that the mechanics of the usual side to side gastrojejunostomy is faulty because of the division of the circular muscle fibers by the longitudinal jejunal incision. When the stomach is stretched by large amounts of food the food may be forced through the patent pylorus and re-enter the stomach by way of the proximal loop. This circulation of food is due to the valve like action of the anastomosis. When the wall of the stomach is stretched so that the edges of the opening into the jejunum are separated the intestinal wall becomes flattened over the stomach and the openings into the intestine become merely narrow slits. The opening on the proximal side of the stomach permits food to circulate by way of the pylorus and duodenum and return to the stomach but both slits offer a valve like hindrance to the egress of food from the stomach by way of the stomach. The more the gastric wall is stretched the more effective the valves become. Moreover the division of the circular muscle fibers at the stomach in the usual side to side gastrojejunostomy makes it impossible for peristalsis to be effective at the angulation in the jejunum at the distal end of the anastomosis. Hence the force that normally pushes the food along and straightens the kink is lacking.

Various modifications have been suggested to avoid these defects in side to side gastrojejunostomy. The author recommends an operation in which the jejunal incision is made transversely.

In the technique described the stomach transverse colon and omentum are turned upward to expose the under surface of the transverse mesocolon as in the usual procedure and the duodenojejunal junction is located. The posterior surface of the stomach is then exposed by an opening made through an avascular portion of the transverse mesocolon. The stomach is delivered and the part required for the anastomosis is located. At either end of the proposed gastric incision a guide suture is inserted.

The line of the gastric incision is selected as in the standard procedures. In the cases reported the open

ing was made so that the stoma would lie vertically or extend from above downward and to the right at an angle of 45 degrees with the horizontal. The line selected is such that there will be no rotation or kinking of the jejunum proximal to the anastomosis. The opening in the mesocolon is closed by the suturing of the cut edges to the stomach wall.

The jejunum is lifted into position for a short loop operation. A point is selected between adjacent straight intestinal arteries and two small crushing clamps are applied side by side extending across from two thirds to three quarters of the diameter of the intestine. A margin of  $\frac{1}{4}$  in. is left at the mesenteric border. After an incision is made between the clamps the handles of the clamps are separated and the direction of the original transverse incision is changed to run parallel with the long axis of the intestine. This portion of the jejunum is approximated to the stomach along the line of the proposed gastric incision so that the distal loop will lie near the greater curvature. A posterior row of interrupted silk sutures is inserted. Care is taken that the middle suture is accurately placed opposite the end of the original jejunal incision.

An incision is then made into the stomach of the same length as the jejunal stoma (approximately 2 in.). The bleeding is controlled with ligatures of fine plain catgut. The crushing clamps are removed and the cut edges of the jejunum are excised. The anastomosis may be completed according to the operator's preference. In the usual procedure suturing with No. 0 chromic catgut is begun in the middle of the anastomosis posteriorly and carried in either direction as a continuous through and through locked stitch. This suture is continued around the angles as a continuous inverting mattress stitch until the anastomosis is completely closed. To avoid producing an unduly large diaphragm care is taken that the inversion on the jejunal side is minimal. The anterior layer is reinforced with interrupted mattress sutures of fine black silk to complete the anastomosis.

On replacement of the stomach and transverse colon the distal jejunal loop gravitates downward at right angles to the greater curvature in the optimum mechanical position. The proximal and distal openings are each about the size of the cross section of the jejunum.

The operation of gastro enterostomy with a transverse jejunal incision according to the technique described has been performed in twenty three cases including seventeen in which it was performed as the procedure of choice and six in which it was done as a palliative measure for the relief of pyloric obstruction in malignant disease.

In the entire series of cases the immediate convalescence was surprisingly uneventful. The functional efficiency of the anastomosis was studied by routine fluoroscopic examinations of the stomach shortly before the patients were discharged from the hospital and at later intervals between two and nine months after the operation. In some of the cases no

six hour gastric residue was noted in the immediate postoperative roentgenograms. The occurrence of the so called vicious circle was largely prevented.

MORRIS H. KAHN, M.D.

#### Balfour D. C. Recurring Ulcers Following Partial Gastrectomy. *Ann. Surg.* 1928 LXXXVIII: 548

The author reports a study of twenty eight cases in the Mayo Clinic in which recurring ulcer following partial gastrectomy was found at subsequent operation. In fourteen cases the ulcer followed resection for gastric ulcer; in eight resection for persisting or reactivated duodenal ulcer following other operations; and in six resection for gastrojejunal ulceration. Classifying the lesions according to operation three followed resection of the Billroth I type, six resection of the Billroth II type, ten sleeve resection, seven a Polya operation of the posterior end to side type, and two resection completed as an anterior end to side gastrojejunostomy.

The cause of these recurrences cannot be established since recurrence may take place when every known factor has been eliminated. The more important factors are hyperacidity, operative trauma and technical errors (such as the injudicious use of clamps, poor approximation of the suture lines and inadequate drainage), gross indiscretions following operation (excessive smoking, the ingestion of indigestible foods, prolonged nervous tension and marked irregularity in meals) and foci of infection.

The symptoms of recurring ulcer parallel those of primary ulcer in one important respect, the pain regardless of its situation, radiation or severity is related to the ingestion of food. The effect of food is a fundamental point in the clinical diagnosis of recurring ulcer.

In the series of cases reviewed the chief complications of recurring ulcer following partial gastrectomy were perforation, hemorrhage and obstruction.

Fluoroscopic examination is of great aid in establishing the diagnosis.

The treatment of recurring ulcer following partial gastrectomy is usually surgical. The preoperative observation and preparation of the patient are exceedingly important because the difficulties and risks of operation are definitely lessened by rest in bed, a bland diet and the administration of large quantities of fluid.

Certain general principles should be observed in the surgical treatment. It is unwise to attempt a plastic operation or to employ the same segment of jejunum that was used after the primary resection. The operation should be done either without clamps or with clamps so lightly applied that trauma will not result. All areas of obvious inflammatory change in either the stomach or jejunum should be removed. The new anastomosis should hang free of the mesocolon and if possible a new type of gastro intestinal anastomosis should be made. In the more intractable cases jejunostomy should be performed on the distal loop for the administration of nourishment and fluids during the first few days after the operation.

The selection of the best type of operation is governed by the type of the primary resection, the site of the ulcer, the extent of the inflammatory process and involvement of other structures and the patient's general condition. For recurrences following a Billroth I type of resection, posterior gastroenterostomy should have first consideration. For recurrences following segmental resections, a Joly operation or modification of this operation is advisable. In the treatment indicated for recurrences following a Billroth II or a posterior I olva operation, the anastomosis is first mobilized, the mesocolon dissected free, the site of the ulcer identified, and a segment of the stomach, the entire anastomosis and enough of the jejunum to remove all obviously inflamed tissue are resected.

The results of operation in these cases of recurrent ulcer after partial gastrectomy show that the disease is very intractable. It should be emphasized that partial gastrectomy as a primary operation for benign peptic ulcers does not afford absolute assurance that ulceration will not recur and that if such recurrence takes place, the difficulties of any further surgical procedures are often exceedingly great and the results none too satisfactory.

Owings J C McIntosh C A Stone II B and Weinberg J A. Intra Intestinal Pressure in Obstruction. *Arch Surg* 1928 xvi 50

In studies of the relationship of intra intestinal pressure to intestinal permeability in obstruction, the authors first measured the normal intragastric and intra intestinal pressure respectively in etherized dogs. They found as Sherrington had done some years previously, that the former is from 4 to 5 cm of water and the latter at a point 40 cm below the pylorus from 2 to 4 cm of water. As a result of their observations, they are of the opinion that a slight positive pressure exists normally in the abdomen.

Observations were made on eighteen small dogs in which simple intestinal obstructions were produced at various levels and in four dogs in which intestinal loops were isolated.

It was found that in simple obstruction the intra intestinal pressure is maintained at a level of from 6 to 8 cm of water, about twice that of the normal maximum (from 2 to 4 cm of water) and that while the bowel is active, the pressure rises to ten or fifteen times the normal. The type and magnitude of intestinal motility in obstruction may be roughly divided into three periods. In the first period—the first twenty-four hours following the obstruction—there is little change from the normal. The second period shows a rise in the basic pressure, marked peristalsis and a marked increase in the intra intestinal pressure generally. In the third or terminal phase, a falling pressure and a decrease in peristaltic activity are noted. A period of violent peristalsis comes on early and occurs more frequently in high obstruction than in low obstruction. In an isolated loop of intestine, the pressure reached 70 cm of water, which was

much greater than the intra intestinal pressure in simple intestinal obstruction.

JOHN H. WOOLSEY, M.D.

Branch J R B. Intestinal Tuberculosis Causing Obstruction. *Arch Surg* 1928 xvi 440

The author reports his clinical experience with eight cases of intestinal tuberculosis of the hyperplastic stenosing type. The condition involved the terminal ileum, the cecum and the ascending colon and in a few cases also the appendix. In two instances there was an associated tuberculous peritonitis. In one case this was in the ascitic stage and in the other in the early plastic stage. In three instances there was evidence of previous pulmonary tuberculosis, but in only one of these cases was the process active. Grossly there was a generalized thickening of the entire wall of the bowel with stenosis caused by old healed scar tissue. In several cases the strictured area was 5 mm or less in diameter. In most of the cases small healed or unhealed ulcers were found. Microscopic examination revealed tubercles and bacilli in all except one case. Glandular involvement was present in some cases but was extensive in only one instance.

The two conditions most likely to be confused with hyperplastic occlusive lesions of the caecum are appendicitis and malignancy. The author's patients were all between twenty-five and thirty years of age. The chief complaint was colicky recurrent paroxysmal generalized and local abdominal pain, for from three to eight hours and accompanied by the gurgling of gas in the bowels, nausea and vomiting. In some cases there was a history of constipation and in others a history of diarrhea. The attacks of pain tended to become more frequent and to last longer.

Physical examination usually revealed a localized moderate tenderness with muscle spasm or resistance in the right lower quadrant of the abdomen and in every instance a persistent mass in the caecal region. The temperature was normal unless complications were present. The leucocyte count was normal except in two cases.

In every case except one the roentgen ray demonstrated the signs of an ulcerative or hyperplastic lesion, namely: (1) a filling defect—non-filling irregularity, narrowing and constriction; (2) general colonic hypermotility; and (3) ileal stasis. The greatest amount of information was obtained from examination following the administration of both a barium meal and a barium enema.

The operation of choice is resection of the diseased portion of the bowel with enterocolostomy. This was done in six cases with only one death. An aseptic technique based on the method of Scarff and adapted to end to side anastomosis was used. Important adjuncts to the treatment were a proximal prophylactic enterostomy by means of a catheter, the limiting of fluids by mouth and a rectum for four or five days and the liberal administration of morphine to reduce peristalsis to the minimum.

The end results are not given but five of the eight patients are sufficiently well to carry on their usual vocations  
JOHN H. WOLFE, M.D.

Cinsburg L. and Klein F. Late Intestinal Stenosis Following Strangulated Hernia  
*Ann Surg* 1928 LXXVIII 204

The authors state that following the replacement of badly devitalized intestine in the abdominal cavity symptoms of obstruction may develop after a varying free interval but the obstruction remains incomplete for a long time. The symptoms are caused by fibrotic intestinal stenosis due to the thrombosis of small mesenteric and intramural vessels resulting from mucosal necrosis and infection by organisms from the lumen of the bowel. The treatment indicated is an early short circuiting enterostomy or bowel resection. Five cases are reported in detail.  
FRANK C. RUDISTEIN, M.D.

Dragstedt C. A. Experimental Studies in Intestinal Obstruction and Intestinal Toxæmias  
*North Am Med* 1928 XXVII 409

Dragstedt discusses obstruction at various levels of the gastro intestinal tract. Complete obstruction or removal of the esophagus and stomach are not incompatible with life if provision is made for artificial feeding. The duodenum jejunum ileum and colon have also been successfully removed.

The intestinal secretion at the various levels is discussed. Loss of gastric juice bile or succus entericus does not seem to have serious consequences but in dogs loss of pancreatic juice causes death in from six to eight days with anorexia gastric irritability vomiting and asthenia. It is concluded that continued loss of certain secretions or failure to resorb them may account for many symptoms arising from obstruction at various levels.

Acute obstruction in the duodenum or ileum causes severe symptoms. The blood chemistry findings are characteristic i. e. decreased chlorides a late increase in the non protein and urea nitrogen and an increase in the carbon dioxide combining power of the plasma.

Isolated loops of bowel which are shunted by end to end anastomoses produce symptoms similar to those of obstruction at their respective levels. If these loops are aspirated drained or removed early no symptoms develop. Fluid from these loops injected intraperitoneally into healthy dogs causes characteristic symptoms of acute obstruction. This seems to prove that the symptoms are caused by toxic products absorbed from the area of obstruction.

The author points out also that dehydration and loss of chlorides are important factors whether they are due to vomiting failure of resorption starvation or toxæmia. Loss of intestinal secretions is harmful because such secretions have a definite secretagogue action. Excessive secretion favors distention and lowers the resistance of the intestinal mucosa to toxic material in the lumen of the bowel.  
FALL W. GREFFLEY, M.D.

Gallagher W. J. The Effects of Injections of Acid and Trauma on Jejunal Transplants to the Stomach  
*Irel Sur* 1928 X 279

In studies of jejunal transplants in animals it was found that scar tissue with nutritional disturbance was present in all cases of chronic ulcer. Ulcers occurred in both anterior and posterior transplants. The mucosal ulceration was caused by the operative trauma and the decrease in the blood supply to the ends of the transplants.

An artificial hyperacidity produced by injections of various concentrations of hydrochloric acid failed to increase the occurrence of chronic ulcer.

WILLIAM E. SHACKLETON, M.D.

Allen N. M. Postoperative Jejunal Ulcers  
*J Surg* 1928 128

The cause of ulcers near the suture lines after gastro enterostomy is unknown. Among possible causes suggested are the use of clamps and non absorbable suture material a stoma which is too small or not well placed a hematoma in the suture line which becomes infected focal infection and operation performed in the absence of a pathological lesion.

The ulcers may appear shortly after the gastro enterostomy or may not be found until many years later as in a case cited by Balfour in which they were first discovered fourteen years after the primary operation.

Allen reports four cases which show the tendency of certain persons to develop ulcers regardless of the procedure carried out.

The first was that of a man aged thirty seven years who was admitted to the hospital with a perforated duodenal ulcer. The perforation was sutured. Three years later the patient was re admitted with ulcer symptoms and a posterior gastro enterostomy and appendectomy were done. Three years later he was admitted with a marginal ulcer. The gastro enterostomy was then disconnected the stomach closed and an end to end anastomosis with the jejunum performed. Six months later the patient returned with a new duodenal ulcer and a partial gastrectomy was done. Seven weeks later he again had a marginal ulcer. This was resected. A short time later the patient returned with a perforation. The perforation was closed but death occurred the same day.

The second case was that of a man thirty two years of age who was first treated for duodenal ulcer. Excision of the ulcer and posterior gastro enterostomy were done. Six years later the patient was re admitted to the hospital with a marginal ulcer on the jejunal side of the anastomosis. The anastomosis was disconnected and the ulcer resected. Uneventful recovery resulted.

The third case was that of a patient who was subjected to a gastro enterostomy in 1919 an operation for marginal ulcer in 1920 and a partial gastrectomy in 1923. Later in 1923 he re entered the hospital with a marginal ulcer. The ulcer was resected and the anastomosis re established. Recovery followed.



Case 4 was another instance in which marginal ulcer developed after gastro enterostomy. The ulcer was excised and the gastro enterostomy disconnected.

From the above cases the author draws the following conclusions:

1. When marginal ulcer occurs the operation of choice is disconnection of the gastro-enterostomy, resection of the ulcer and repair of the stomach and jejunum.

2. It is not justifiable to sacrifice one half or two thirds of the stomach as a primary procedure when no assurance can be given that the ulcer will not recur.

3. Marginal ulcers occur just as frequently after partial gastrectomy as after gastro enterostomy.

I EDWARD BISHKOW M.D.

McMurrich J. P. and Tisdall F. F. A Remarkable Ileal Diverticulum. *Ibid Rec* 1928 xviii 32

The patient whose case is reported was a male infant thirteen months of age who developed a tumor like swelling in the right upper portion of the abdomen. Later the swelling disappeared for a month and then returned permanently. Black stools had been passed. Before an operation could be performed the child developed pulmonary trouble and died.

At autopsy a remarkable diverticulum of the ileum was found. It arose from the intestine 4 cm. above the ileocecal valve, extended upward parallel with the mesenteric surface of the ileum and lay between the folds of the mesentery. For 50 cm. of its extent it was adherent to the wall of the ileum, and for an extent of 9 cm. it was free in the roof of the mesentery.

Grossly and microscopically it resembled the ileum in structure and its lumen was continuous with that of the ileum.

Its origin on the mesenteric surface of the intestine made its identification as a Meckel's diverticulum uncertain.

The author reviews several similar cases reported in the literature and discusses the embryological development of diverticula.

I EDWARD BISHKOW M.D.

Barron M. E. Simple Non Specific Ulcer of the Colon. *Arch Surg* 1928 xvii 355

The author reviews fifty cases of simple non specific ulcer of the colon which have been reported in the literature and three cases of his own. He believes that such ulcers are not steroidal or a sign the result of constipation and that the chronic inflammatory reaction around them is secondary to the lesion. The etiology of this type of ulcer is as obscure as that of the common ulcers occurring in the stomach and duodenum.

Of particular interest were the vessel changes in the region of the ulcer. Two cases showed vascular lesions similar to those associated with endarteritis obliterans in the extremities but in neither of the

cases was there any associated lesion of the extremities. The ulcers varied in size and position. Their long axis was either parallel with or transverse to the long axis of the gut.

The author believes that in all cases the original lesion is an acute ulceration and that the inflammatory thickening corresponds in degree to the chronicity of the ulcer.

Marked constipation was present in twenty-one of the cases reviewed. In five it was not present and in twenty-seven it was not mentioned. Melena occurred only occasionally. Severe hemorrhage was rare. The diagnosis is difficult to establish before perforation takes place. Simple ulcer of the colon has no pathognomonic signs.

The surgical treatment of simple ulcer varies according to the character of the ulcer from simple puckering of the serosa over the base to resection or a plastic operation.

In conclusion the author states that simple ulcer analogous to gastric or duodenal ulcer may occur in any part of the alimentary tract from the esophagus to the rectum. Simple ulcer of the colon is not infrequently associated with gastric or duodenal ulcer. It is a distinct lesion which probably occurs more frequently than is generally believed. Its gross pathological picture may closely simulate that of carcinoma.

ROSCOE R. GRAHAM M.D.

Chapman J. F. Polyposis of the Large Intestine. *Am J Roentgenol* 1928 xi 115

The author reports the case of a woman forty-nine years of age who had suffered for five months from gnawing burning and hunger sensations in the upper part of the abdomen which were relieved by food and soda. She had also been constipated but the constipation had not increased.

On physical examination a tender mass was palpated in the epigastrium and peristalsis passing from right to left was visible. Roentgen examination with the use of a barium mixture revealed a niche on the greater curvature, a filling defect in the body of the stomach and a filling defect involving the entire transverse colon. Although there was marked narrowing the barium mixture passed through readily.

A diagnosis of carcinoma of the transverse colon was made and resection was done. When the resected specimen was opened the wall was found to be 2 cm. thick and the mucosa to be arranged in a polypoid manner. The patient did not regain strength following the operation. On re-examination the stomach was found to be smaller with persistence of the niche and filling defect. Death occurred ten months after the operation. Autopsy showed the mucosa of the stomach to be covered by flat polyps. The walls were more than 2 cm. thick and an ulcer was present.

In his brief discussion of this case the author states that the great extent of colon involved points away from the possibility of cancer toward the probability of polyposis. He regards the case with

which the barium passed through the colon in spite of the clinical evidence of marked obstruction as a significant finding in polyposis

CHARLES H. HEACOCK, M.D.

Hullisiek H. E. Multiple Polyposis of the Colon  
*Surg. Gynec. & Obst.* 1929 XLIV 345

The term polyposis of the colon has been used to designate a single polyp scattered polyps or a polyposis in which the entire large bowel including the rectum is involved by thousands of sessile adenomatous tumors

Lockhart Mummery classifies the adenomata occurring in the bowel as follows (1) true multiple adenomata (2) polyps associated with hyperplastic tuberculosis (3) multiple polyps associated with an old structure of the colon and (4) a polypoid condition resulting from ulcerative colitis. The classification of Erdmann and Morris made on a clinical basis comprises two forms (1) the adult acquired type and (2) the adolescent congenital disseminated type. In almost all of the recorded cases of multiple polyps of the colon the condition eventually became malignant

Polyposis of the colon appears to be hereditary as it can be traced through several generations. A large percentage of the members of families with the condition die at an early age from cancer of the bowel

The operation indicated depends upon the presence or absence of malignancy, the extent of the involvement, the general condition and the technical ability and surgical experience of the operator. In the congenital type of case the usual extensive involvement renders complete removal of the polyp-bearing area a more or less heroic task

Hullisiek draws the following conclusions

1. There are two distinct types of polyposis, the acquired and the congenital
2. Multiple polyposis is most common in childhood and youth. In the cases reviewed the average age was thirty and nine-tenths years
3. The symptoms are usually present for a long time before medical attention is sought
4. Males and females are affected with about equal frequency
5. The probability of malignant change is high. Of the cases reviewed malignancy resulted in 34.6 per cent
6. There is a definite hereditary tendency toward the development of polyposis of the colon
7. The mortality is high—47.2 per cent under all forms of treatment
8. The treatment has not yet been standardized

MORRIS H. KAHN, M.D.

Larimore J. W. Roentgenology of the Colon. 1m  
*J. Roentgenol.* 1925 XI 101

Roentgenological studies of the colon have been made largely to determine pathological anatomical changes. The author emphasizes the changes in physiology and attempts to correlate these with the clinical findings

Certain anatomical variations are of fundamental importance. The length of the colon should be determined as it affects the total time of stool movements, the amount of absorption and the degree of inspissation. In 13.2 per cent of 562 colons studied the right half was lengthened and the cecum was in the pelvis. Redundancy of the sigmoid was found in 18 per cent

Cecal stasis is frequently associated with caecal redundancy, especially if there is a concomitant loss of muscle tone and in children frequently it causes pain, migraine and cyclic vomiting. In the sigmoid the degree of motor impairment is directly proportional to the length of the redundant portion

The change most frequently noted roentgenologically is decompensation of the muscle tone. In estimations of tonus the influence of the habitus must be considered. Contrary to common belief constipation due to a decrease of muscle tone (atonic constipation) is more frequent than constipation due to an increase of tone (spastic constipation). Redundancy is always accompanied by impairment of tone, probably because of over distention. However it may occur in all segments. For the restoration of normal tone to the hypotonic muscle fibers a soft colonic content that will yield readily to muscular contraction is essential. Hypertonicity must become greatly exaggerated before spastic constipation develops. Then laxatives will only increase the spasticity and constipation

Lack of vitamins leads early to colonic irritation. The irritation is manifested first by over secretion of mucus and hyperperistalsis and later by degenerative changes. Chronic non-infectious arthritis, especially of the spine and pelvis, are constantly associated with abnormal function of the colon

Roentgenology cannot demonstrate changes in the walls of the colon that make for increased permeability but it demonstrates the associated alterations of contour, topography, tonus and irritability

CHARLES H. HEACOCK, M.D.

Willis B. G. The Treatment of Perforative Appendicitis with Or without Abscess. *South M. J.* 1925 XXI 622

Willis states that in fulminating cases of appendicitis given improper treatment there is a definite increase in the mortality with the increase in the length of time elapsing between the appearance of the symptoms and operation

He reviews 382 cases of acute perforative appendicitis to which operation was performed in the period from July 1914 to August 1927. There were 23 deaths, a mortality of 6 per cent. In all of these cases drainage was established. In the few cases in which the perforated appendix was securely walled off by omentum the omentum was not detached but was amputated with the appendix and there was no drainage. In 16 of the 23 fatal cases from 1 to many purgatives had been given

During the same period 1,730 patients were operated upon primarily for appendicitis with 32 deaths

mortality of 1.8 per cent. Six hundred and twenty-four laparotomies were performed.

If the diagnosis of acute or perforative appendicitis with or without abscess is made with reasonable certainty the author operates immediately. Only one persistent fistula requiring operation for closure has occurred.

Only 5 herniae have been noted. In almost all cases from 3 to 5 pieces of fenestrated soft rubber are used for drainage. These are placed according to the site of the abscess or perforated appendix. If the pelvis has been invaded, care is used to carry the drain to the bottom and leave it there on withdrawal of the carrier. The drains are shortened after the third day and are removed by the seventh day.

In 4 fatal cases a secondary enterostomy was performed. In the cases of a few patients who lived a primary enterostomy was performed.

The postoperative treatment is described, the complications are discussed, and the cases in which an autopsy was performed are reported briefly. The main points in the article are summarized as follows:

1. Immediate operation should be done in all cases of acute perforative appendicitis regardless of the length of time that has elapsed since the beginning of the attack.

2. The subcutaneous administration of saline solution should be begun at the time of operation and kept up until the water balance has been reestablished.

3. The appendix should not be removed in all abscess cases. Surgical judgment should be the guide in those cases in which it is left.

4. Proctocolectomy should be used only in cases of very limited peritonitis.

5. Fowler's position should be employed only in cases in which the pelvis has been invaded by the infection.

6. Patients with abscess and peritonitis above the brim of the pelvis should be turned on the right side.

7. Provision for free drainage should be made in all cases.

CARL R. STEINKE, M.D.

Smith R. B. Rare Complications of Acute Appendicitis. *Brit. M. J.* 1928 II 330.

Smith reports three cases of appendicitis with rare complications.

The first was a case of acute appendicitis complicated by a perforated duodenal ulcer. As both the physical examination and history most closely suggested acute appendicitis the abdomen was opened in the right iliac fossa. The appendix showed an acute inflammation and was removed. However, as the condition of the appendix did not account for the large amount of free turbid fluid found in the peritoneal cavity, a second incision was made in the upper abdomen. A small punched out perforation was then discovered on the superior surface of the duodenum just distal to the pylorus. The perforation was closed by a pursestring suture and sutured over. Drainage tubes were inserted through both incisions. The patient made an uneventful recovery.

After he returned for a gall bladder operation which was found necessary at the first operation but seemed inadvisable at that time.

The second case was one of acute gangrenous perforative appendicitis in the sac of a strangulated inguinal hernia. The patient was a man of seventy-seven years of age. After operation for the hernia and appendicitis signs of intestinal obstruction developed and at a second operation a band constraining the large bowel was divided and a caecostomy was done. Evacuations then took place by rectum but patient failed rapidly and died.

The third case was that of a man twenty-five years of age who had been operated upon two years previously for appendiceal abscess. The abscess was drained but the appendix was not removed. A ventral hernia developed in the operative scar. At operation the hernia was found to contain a perforated appendix buried in omentum. The appendix was removed and the hernia repaired. Recovery was uneventful.

I. EDWARD BISHAW, M.D.

#### LIVER GALL BLADDER PANCREAS AND SPLEEN

Higgins G. M. and Murphy G. T. The Phagocytic Cells (von Kupffer) in the Liver of Common Laboratory Animals. *Anat. Rec.* 1928 21 75.

Since it has been shown that the reticuloendothelial system with its manifold subdivisions is intimately related to both physiological and pathological processes it becomes increasingly important that complete data be compiled concerning the origin, function and ultimate disposition of the cells comprising this system. Immediate interest in the reticulo-endothelial system is essentially restricted to the liver in which the stellate cells originally described by von Kupffer constitute a structure whose function is at once defensive and metabolic.

This study of the stellate cells was approached with definite objectives. Although many descriptions of the cells are available there is no adequate comparative study of them as they occur within the group of vertebrate animals. Nathan (1908) studied the comparative anatomy of the von Kupffer cells in a number of vertebrates but reported few details. Little is known regarding the origin of these cells from primitive vascular endothelium and the extent to which they may phagocytose in fetal life. Before the cytological physiology of the liver is understood it will be necessary to determine the life cycle of von Kupffer cells, their fate after the ingestion of particulate matter and whether they become active polyblasts within the blood stream under normal conditions as well as in certain pathological states. This report is concerned only with the first two of these problems and is restricted to mammals.

The use of vital dyes in the delineation of the stellate cells has been for the most part satisfactory. India ink in dilute suspension and iron stains have been frequently employed. The authors have found

the graphite 'hydrokollag 300' which was first described by Drinker and Churchill in 1927 a most excellent medium for the study of the stellate cells of the liver. They have devised a method of preparing the material which differs somewhat from that employed by Drinker and Churchill.

In the authors' study small quantities of hydrokollag 300 depending on the size of the animal were injected directly into the circulation. At varying intervals following the injection the animals were killed and the livers fixed in corrosive acetic and stained with hematoxylin and eosin. The most satisfactory results followed fixation of the liver *in situ* which was done by introducing the corrosive acetic directly into the portal vein.

A study of the distribution of the stellate cells was made on the dog, cat, swine, rat, rabbit, guinea pig, pocket gopher, striped gopher, and monkey. The preliminary observations on the form, position, and frequency of the cells in laboratory mammals led to the conclusion that the cells are actively phagocytic toward particulate graphite injected into the blood. Their response to the foreign substance is immediate; a fraction of a cubic centimeter injected into a mesenteric vein is at once engulfed by them. They literally become engorged at once. Even when sections of the liver were taken immediately after the intravenous injection, the stellate cells were found so well laden with the graphite that a detailed cytoplasmic study was impossible. Without the delineation obtained by the injection method, the picture of the phagocytic cells is entirely inadequate. The extent of the cells is never so completely realized as when it is seen after extensive phagocytosis of the particles of graphite, and one wonders whether such remarkable distensibility is not correlated in some way with the amount of work the cell must perform and that in its resting inactive state its form and size are considerably less conspicuous. The authors were unable to substantiate the observation of Havet (1925) that these cells lie between the hepatic endothelium and its trabeculae of the liver. They conclude with Schilling (1909), Zimmermann (1923), and others that the cells are an integral part of the endothelium but directed in their position toward the lumen of the sinusoid.

In all of the animals studied there was relative similarity in the size and proportions of the stellate cells. In certain animals the cells were more numerous, considerably larger, and definitely stellate; in others they were more stocky and without the finer protoplasmic processes that are usually seen. Without regard to form or size, the exceedingly marked phagocytic activity of these cells was characteristic of all of the hepatic organs examined.

Copher G. H. and Dick B. M. *Stream Line Phenomena in the Portal Vein and the Selective Distribution of Portal Blood in the Liver*. Arch Surg. 1928, LVIII, 408.

Copher and Dick attempted by experimental study on animals to confirm the theory of the pres-

ence of segregated streams of blood in the portal vein and their subsequent distribution to definite parts in the liver. The original work on this problem and the anatomy of the portal circulation in the dog are reviewed.

By the use of emulsified iodized oils, the authors found that there is no intrahepatic anastomosis between the larger branches of the portal vein. The coloring material used was trypan blue. One gram of the crystals was dissolved in 15 c cm of blood serum and as a rule 3 c cm of this amount were used at each intravenous injection of the portal radicals. Following injection of the splenic vein, almost all of the left lobe of the liver but only a limited area of the extreme right lobe was colored by the dye. Most of the right side of the liver retained its normal color. Injection into a small vein on the lesser curvature of the stomach uniformly stained the left half of the liver. On injection into the superior pancreaticoduodenal vein, the dye was carried to the right side of the liver and the two right lobes were deeply stained. Dye injected into a mesenteric vein in the highest part of the jejunum was carried to the two extreme right lobes of the liver. When a small vein in the meso-appendix was injected, the dye was transported to all parts of the liver. A similar distribution was found when a vein on the mesentery of the left large bowel was injected. Posture did not affect the dissemination of the dye. When the dye was injected into different branches of the portal circulation, it was possible by transillumination of the portal vein by candlelight to see sharply defined intraportal currents and to note the extreme rapidity of the flow in the portal vein. The volume of flow in the portal vein is estimated at 60 c cm per minute per 100 gm of liver.

The authors conclude that blood carried to the left lobe of the liver is drained principally from the abdominal organs that are not strictly engaged in the digestion or absorption of food, i.e., the spleen, stomach, and colon, whereas the blood carried to the right side of the liver is collected from the alimentary tract where the products of digestion are absorbed. They were able to demonstrate three definite streamlines in the portal vein derived from three sources—the splenic vein, the large mesenteric vein, and the small mesenteric vein. Roscoe R. Graham, M.D.

Brun R. G. *Hydatid Cysts Communicating with the Biliary Tract: Their Frequency, Their Treatment Based on 170 Observations of Hydatid Cysts of the Liver Operated Upon at the Sadiki Hospital (De la communication des kystes hydatiques avec les voies biliaires: leur fréquence, leur traitement d'après 170 observations de kystes hydatiques du foie opérés à l'hôpital Sadiki)*. Bull et mém Soc nat de chir. 1923, LIV, 1014.

A male Arab was admitted to the hospital presenting all the signs and symptoms of a suppurating hydatid cyst. In addition, there was a deep icterus. At operation, a superficial suppurating cyst of the right lobe of the liver, the size of an ostrich egg,

was marsupialized. For several days the general condition showed improvement but the icterus persisted and the patient died from cachexia a month later.

Autopsy disclosed a second suppurating cyst of the same size as the first one but situated in the depths of the liver. There was a communication between this cyst and the right branch of the hepatic duct. A collapsed daughter cyst partially occluded the common duct.

Another case reported by the author was that of an Arab of forty six years who suddenly developed an obstructive icterus while he was in the hospital for the treatment of urethral stricture. His temperature rose to 102 degrees F and the icterus increased. A mass the size of a man's fist was discovered in the region of the gall bladder.

At operation the gall bladder was found to be the size of a turkey's egg. Above and lateral to it was a large hydatid cyst containing many daughter cysts and a purulent fluid strongly tinged with bile. The gall bladder also contained many cysts. Both the cyst and the gall bladder were drained.

The first days after the operation there was a profuse discharge of bile from the cyst but none from the gall bladder. The icterus persisted. At a second operation performed on the fifteenth day, the common duct was found greatly dilated and when it was opened a collapsed cyst escaped with a flood of bile. The duct was drained. The patient died a few hours later.

Among the author's 170 cases of hydatid cyst of the liver there were 27 cases complicated by a communication between the cyst and the bile tract. These cases are grouped as follows: (1) cysts communicating with the bile ducts without causing obstruction; (2) cysts opening into the gall bladder; and (3) cysts with migration of daughter cysts communicating with the bile ducts and producing obstruction.

In the first group there were 15 cases. The cysts contained bile and as a result of the communication they suppurated. Sometimes they contained air. In such cases the cysts suffer from the communication and it is to the cysts that the treatment should be directed.

In the second group there were 8 cases. In such cases the gall bladder suffers from the communication rather than the cyst. The gall bladder should be drained directly or through the cyst if the opening is large. As the cystic duct is usually obstructed drainage of the gall bladder is of no avail if there is icterus due to obstruction of the common duct.

In the third group there were 4 cases. In the 2 which are reported in this article the treatment was directed to the cyst and gall bladder and the results were poor. In the 2 others the common duct was attacked primarily and the cysts secondarily and both patients recovered. From this experience the author concludes that whenever there is icterus the common duct should be operated upon first.

ALBERT F. DEGRAAT, M.D.

Hillebrand H. Duodenal Irrigations in Cases of Cholelithiasis (Duodenalirrigationen bei Cholelithiasis). *Zentralbl. f. Chir.* 1923 I 390.

The author reports a case in which following a cholecystectomy with drainage of the hepatic duct, there remained a fistula through which all the bile drained. Internal medication was without effect, as were also attempts to force the drainage into the intestine by tamponade of the fistula. After draining for two months the tract closed up in a few days following two irrigations with 300 c.c. of 15 per cent hot magnesium sulphate solution.

In another case the fistula closed more quickly following the irrigations.

The author concludes that the persistence of such fistulae is due to a marked chronic catarrhal swelling of the duodenal mucosa. TROTT (2).

Richter H. M. and Zimmerman L. M. Closure of the Abdomen without Drainage After Operations upon the Bile Tracts. *Ann. Surg.* 1923 LXXXVIII 187.

Primary closure of the abdomen in gall bladder operations has been practiced by the authors for twelve years and the range of its indications has been widened by experience. The incision is closed after simple cholecystectomy operations on the common duct and transduodenal choledochotomy. This is done in both acutely infected cases and chronic relatively aseptic cases. The spilling of bile or duodenal contents in the operative field is not considered a contra indication. For persistent liver oozing a gauze pack is employed. In operations on the common duct a drain is used when accurate suture is impossible or there are other contra indications to primary closure.

Early operation has been found to be of distinct advantage. In the cases in which simple cholecystectomy was performed the mortality was 1.29 per cent whereas in cases requiring work on the common duct it was 14.28 per cent. The mortality in cases in which primary closure was done was 2.63 per cent whereas in cases with drainage it was 10.27 per cent. However the poorest risks and the most difficult cases were included in the drained cases. Of the 7 deaths in the cases without drainage only 1 was due to peritonitis. In 204 cases in which simple cholecystectomy was done with primary closure the only death due to an abdominal condition was the result of pancreatitis. The other death in this series was due to pulmonary embolism which occurred on the day of the patient's discharge. In the entire series of 262 cases without drainage there was only 1 death due to peritonitis.

The postoperative course is easier in cases without drainage than in those with drainage. Coventry found that when drainage is established there is more pain particularly pain radiating to the shoulders and more tympany, nausea and vomiting than in cases without drainage. The increase in the pulse rate and the temperature is greater and the period of convalescence is prolonged. The presence of the

drain predisposes to infection hernia and adhesions increases the danger of thrombosis embolism and secondary hæmorrhage interferes with the normal healing process and causes drainage of bile which would not otherwise occur In cases with primary closure the escape of bile which is associated with drainage and the pain which is caused by the removal of a drain are avoided The presence of bile in the peritoneum seems to be well tolerated except in acute gangrenous cholecystitis with highly infected bile

The technique employed by the authors is separate ligation of the cystic artery and duct without burial of the stump of the cystic duct As the peritoneum has more protective power than the retroperitoneal tissues it is safer to tie the stump than to attempt to bury it behind the peritoneum

From the evidence presented in the series of cases reviewed the authors conclude that primary closure is safe and is preferable to drainage except in the presence of special indications for the use of a drain tube  
F B PLATT M D

**Henschen C** The Surgical Anatomy of the Splenic Vessels (*Die chirurgische Anatomie der Milzgefäße*) *Schats med Wchnschr* 1918 LVIII 164

After a detailed description of the extrasplenic portion of the vascular supply of the spleen the surgical topography of the splenic vessels and the collateral circulation of the splenic artery Henschen gives rules for surgery of the spleen which are based on the vascular anatomy

In order to save for the body the blood contained in the spleen when the spleen is to be removed the splenic artery should be ligated first the blood milked into the venous trunks adrenalin and pituitrin injected into the spleen and the splenic veins then ligated

Splenectomy and resection incisions should be made transversely In resection great care must be taken not only in the zone of the various entering vascular branches but also in that of the intra-splenic transverse system of vessels which near and parallel with the hilus run in a cranio-caudal direction In resections of the hilus this zone of anastomosis should be ligated Whenever possible the resection should be extended only to this region not directly into it

Suture of a torn spleen and resection of the spleen should always be performed under temporary constriction of the splenic circulation Constriction may be continued for ten minutes without damaging the organ As the spleen bleeds less when it is pulled up out of its bed the security of the ligature should be tested after the organ has been put back in place by injecting methylene blue into the artery

With regard to ligation of the vessels of the hilus of the spleen as an independent operative procedure Henschen states that only the artery should be ligated the veins being left free to carry off the catabolic products from the interior of the spleen

The ligation should be done at a site where it will not interfere with the blood supply of the pancreas In the cases of large tumors of the spleen with adhesions the artery should be exposed farther away from the organ either above or behind the pancreas—if necessary near its origin

In cases in which the collateral circulation is poor the organ should be surrounded with omentum and if necessary drainage should be established to protect against the danger of organ necrosis and toxæmia Instead of the ordinary ligating functional throttling of the splenic artery with free fascial transplants is advisable  
FRY (Z)

**Hutchinson R** Chronic Splenomegaly in Childhood Diagnosis and Treatment *Brit M J* 1928 II 281

Chronic splenomegalies of childhood may be classified as follows (1) chronic infection (2) tropical splenomegaly (3) splenomegaly in metabolic diseases (4) Gaucher's disease (5) splenomegaly in diseases of the blood (6) splenomegaly associated with cirrhosis of the liver (7) splenomegaly due to splenic thrombosis (8) the splenomegaly in splenic anaemia of the adult type and (9) the splenomegaly of Bart's disease

Tumors cysts new growths and abscesses of the spleen are extremely rare

In cases showing a negative Wassermann reaction no enlargement of the lymph glands and no characteristic leucocytic picture but in which there is some degree of anaemia associated with leucopenia increased fragility of the red cells or hæmatemesis splenectomy seems advisable With regard to cases of Gaucher's disease and cirrhosis of the liver there is a difference of opinion as to the advisability of removing the spleen

WILLIAM E SHACKLTON M D

**Billings A E** Abscess of the Spleen *Int Surg* 1923 LXVIII 476

Billings reports 3 cases of abscess of the spleen which were operated upon with recovery The development of a splenic abscess depends almost invariably on the deposit in the spleen of pyogenic organisms from a primary source of infection by way of the blood stream The source may be a suppurating focus obvious or concealed in any part of the body Splenic abscess is most apt to occur when there is a general blood stream invasion by pus producing organisms and the infection has reached the magnitude of a septicopyæmia such as is observed in cases of acute ulcerative endocarditis and other virulent generalized infections caused most commonly by streptococci and staphylococci The causative agents include almost all of the pyogenic organisms Splenic suppuration has been attributed to many of the acute infectious diseases such as influenza smallpox and rheumatic fever Certain of the specific fevers particularly enteric typhus and relapsing fevers are believed to play a special rôle in its etiology None of the recently

reported cases has been attributed to malaria but Kuttner and others ranked malaria next to typhoid in etiological importance.

In 3600 autopsies performed at the Pennsylvania Hospital 24 cases of abscess of the spleen were found. In 5 cases the abscess was associated with acute peritonitis due to streptococci or staphylococci infection. In 3 the abscesses were multiple and in 2 they were small and solitary. In none had there been any symptoms suggestive of splenic inflammation. In 2 cases the antecedent infection was suppurative appendicitis in 1 a staphylococcus pyogenes aureus infection of the upper lip with septicæmia and in 1 suppurative cholecystitis with liver abscess. One case was an example of infection of the spleen with abscess formation by propagation following perforation of the stomach.

Most abscesses of the spleen result from the breaking down of infected infarcts. The symptoms of splenic abscess are exceedingly variable in character and intensity. In some instances the manifestations that might be considered more or less typical are overshadowed or altogether obscured by the infection of which the suppuration in the spleen is only a complication. The severity of the symptoms of abscess of the spleen depend upon whether the course of the condition is acute subacute or chronic and somewhat also upon the etiological factor. Of the causes typhoid fever probably influences the course and character of the symptoms more strikingly than any other infection. In some instances an abscess may develop during or soon after the primary infection but more commonly there is an interval of a few weeks or months before suppuration takes place. The development of the abscess is sometimes mistaken for a relapse. In exceptional cases the signs of abscess formation

may not be manifested for many months or years after the attack of typhoid. The local symptoms may be so mild as to be overlooked.

As the evolution of the abscess progresses from the upper pole toward the thorax or from the lower pole toward the general peritoneum symptoms of a pleuropulmonary or abdominal nature will develop. When the extension is toward the thorax there will be diaphragmatic and pleural involvement characterized by pain of varying intensity located in the left hypochondrium and lower thorax and radiating to the back and sometime also to the left shoulder.

X-ray examination is of great diagnostic aid. Elevation and fixation of the left diaphragm is very suggestive and is a constant finding when the infection has extended to the subphrenic space as is usually the case in abscess of the upper pole. Exploratory puncture is also a valuable aid to diagnosis and may give the needed information in a doubtful case.

The surgical treatment of abscess of the spleen is either splenotomy or splenectomy. Surgical approach to the abscess may be gained by the transpleural, the abdominal or the retroperitoneal route. The route chosen will depend upon the direction of the abscess invasion. Frequently this is toward the thorax necessitating a transpleural or transdiaphragmatic approach. An abscess situated in the anterior surface or lower pole will usually be more accessible through the abdomen. Splenectomy is indicated only in rather exceptional cases in which the organ is comparatively free from adhesions, the infection is confined within the capsule and the removal of the organ can be effected without difficulty or danger of disseminating the infection.

SAMUEL KAY, M.D.

# GYNECOLOGY

## UTERUS

De Sa H A Case of Double Uterus *J Obst & Gynec Brit Emp* 19 8 xxiv 522

The case reported by the author was that of a woman forty two years of age who sought treatment for severe pelvic pain. The patient had had five normal pregnancies her menstrual periods had always been regular and normal and her general development was good.

On physical examination a double uterus was suspected from the discovery of a pyiform mass in each fornix the absence of a typical uterus and the presence of remnants of a vaginal septum. This suspicion was confirmed at exploratory operation although X ray examination following the injection of lipiodol had failed to reveal the anomaly. Hysterectomy was not permitted.

HARVEY B MATTHEWS M D

Masson J C and Parsons E Cystic Cervicitis with Special Reference to Treatment by Cauterization *Am J Obst & Gynec* 1926 xvi 348

A clinical study of chronic cystic cervicitis in a hypertrophied cervix was made in order to compare the results of cauterization with those following amputation of the cervix. The cauterization was not the simple office cauterization but a thorough procedure on an anesthetized patient or with the operative field blocked off with parasacral or caudal anesthesia so that all of the cysts were punctured and their walls thoroughly destroyed this procedure destroying considerable tissue but not interfering with the blood supply to the endocervix. The majority of amputations were of the Sturmdorf type. Of the 1032 cases studied 530 were treated by cautery and 481 by amputation. Since 1924 cauterization has been the favored method.

The incidence of cystic cervicitis at the Mayo Clinic is less than is usually reported. Of 26900 women examined it was found in 2368 (105 per cent). Over one half of the women treated were more than forty years of age as operative measures are not usually advised for this condition during the reproductive period. The most important single factor in the etiology of the condition is the trauma of multiple pregnancies. Sterility was a complaint in only 15 of the cases.

The chief symptoms were leucorrhoea (23 per cent) menstrual irregularities (23.4 per cent) pelvic pain (23.2 per cent) and irrelevant symptoms (30 per cent). The indications for cauterization or amputation of a hypertrophied eroded cystic cervix depend upon the local condition of the cervix and not upon the symptoms. After complete healing the local appearance of the cervix following thorough

cauterization is similar to that seen after a low amputation.

According to the findings of the pathological study of the tissue removed and the follow up of the patients treated there is no indication that cystic cervicitis is a precancerous condition.

The results show that cauterization is as effective as amputation in the cure of leucorrhoea and that the general health is not affected by the cervical condition to any great extent.

Pregnancy occurs more frequently miscarriages are less frequent labor is more often normal and lacerations occur less frequently following thorough cauterization than following amputation of the cervix.

Simon H E Hematometra A Report of Twenty Three Cases *Surg Gynec & Obst* 1928 xlvii 356

Hæmatocolpos hæmatometra and hæmatosalpinx may develop from obstruction in the lower part of the female genital tract preventing the normal escape of the menstrual blood from the uterus. The obstruction may be congenital or acquired. When it is congenital it usually involves the vagina and may be simple or associated with more complex anomalies of the genital tract. When it is acquired it usually involves the cervix except in the aged and is frequently the result of trauma incident to parturition or follows a plastic operation on the cervix. The acquired type of obstruction may be complete or incomplete.

The symptoms of hæmatometra are typical. There is absence or cessation of the menses coincident with attacks of severe pelvic or abdominal cramps usually occurring about once a month. The attacks of pain tend to become more severe and are associated with progressive enlargement of the uterus.

The treatment depends upon the requirements of the individual case. When the risk of the conservative operation is not prohibitive the genital organs should be preserved during the childbearing age. In the presence of certain complications vaginal drainage should be combined with abdominal exploration. In some cases radical surgical measures should be adopted primarily.

Allen E and Bauer C P Autotransplantation of Endometrium in the Eye of Rabbits *Surg Gynec & Obst* 1928 xlvii 329

Traut H F Adult Human Endometrium in Tissue Culture *Surg Gynec & Obst* 19 8 xlvii 334

In the experiments on rabbits reported by ALLEN and BAUER the abdomen was opened by a midline incision under ether anesthesia a small portion or all of the uterus was removed and placed in warm normal salt solution and as soon as possible there



after small pieces of the tissue were implanted in the anterior chamber of each eye. In the cases of four of the rabbits small bits of testicular tissue were implanted in the eyes in order to obtain a comparative check on growth and reversion. The authors found that with a little practice they could readily insert pieces up to the size of a split pea. After the abdomen was closed a small piece of tissue was implanted in the abdominal incision.

The eyes were first prepared by clipping the lid hair short with ordinary finger nail scissors. A drop of mercurochrome dropped into each eye furnished enough fluid for the easy handling of the implant. With the eye fixed and slightly rotated an incision was made through the cornea at the limbus with an ordinary cataract knife. As a rule enough fluid escaped to reduce the intra ocular tension sufficiently for the easy insertion of the implant in the anterior chamber on the end of a blunt eye spatula. In the beginning the lids were closed by a single interrupted suture for the first forty eight hours but later better results were obtained by leaving the eye open without any form of dressing.

A successful take was obtained in forty four of the fifty eyes. The eyes were either enucleated separately or when the second one was to be removed the animal was killed with ether and an autopsy was performed. The eyes were fixed in Zenker's solution and sectioned in celloidin. The time before their removal ranged from two to four teen months.

Allen and Bauer draw the following conclusions:

1. The epithelium of the endometrium in rabbits has a marked tendency to proliferate.
2. This proliferated epithelium tends to retain its secretory ability and to reproduce gland like spaces and cystic cavities.
3. Its ability to invade other tissue is not so marked as its tendency to proliferate but seems to be quite definite.
4. Ectopic endometrial epithelium did not tend to produce a connective tissue reaction in these transplantations.
5. Endometrium transplanted to the eye of rabbits will undergo the same decidual reaction as takes place in the pregnant uterus.
6. Transplanted endometrial stroma and uterine musculature remain viable for long periods of time without showing any tendency toward further growth.
7. Testicular or peritoneal epithelium did not show a similar ability to proliferate or invade.
8. In rabbits the abdominal wall does not seem to favor the survival of implanted endometrial tissue.

Traut secured endometrial tissue from the cavity of uterus freshly received from the operating room. While still warm and sterile the uterus was opened and a small portion of endometrium was removed and placed in warm sterile Ringier's solution. The sterile endometrium was carefully washed in several changes of Ringier's solution to free it

from all traces of blood. The tissue was cut into very small fragments and these were transplanted into a medium composed of a solid part formed from a fibrinogen suspension and dilute embryonic extract containing a trace of sodium linoleate to prevent digestion of the clot and a fluid part composed of tyrode solution. The fibrinogen suspension was introduced first being diluted with an equal volume of tyrode solution so that the whole volume was 1 c.c.m. Five tenths of a cubic centimeter of tyrode solution containing a trace of sodium linoleate and 0.5 c.c.m. of dilute embryonic extract were then added. The fragments of endometrium were carefully placed in the medium equidistant from one another before coagulation took place. The medium was then allowed to solidify and 1 c.c.m. of tyrode solution was added.

The rate of growth of cultures was measured each forty eight hours. The cultures were placed in a projectoscope which cast a shadow of known magnification. The shadow was outlined and its area measured by means of a planimeter computed and charted. The areas were plotted from day to day so that a growth curve for the various cultures was kept. In this way it was possible to ascertain with considerable accuracy the average rate of growth of the endometrial cells in the media used. This was found to be about half as fast as that of embryonic cells in the same media.

It was found that the growth occurred almost wholly from the stromal or connective tissue portions of the explant. The epithelial cells apparently had such a long latent period that they were overgrown by the stroma cells. This gave an almost pure strain of connective tissue cells on the periphery of the cultures and by carefully sectioning a culture so as to obtain only the peripheral cells it was possible to obtain pure strains of stroma cells.

A pure culture of stroma cells growing at a known rate of growth in a medium of known composition having been obtained it seemed desirable to determine if possible what effect follicular fluid and an extract of corpus luteum cells would have on such a culture if it was used to replace the embryonic extract.

The cultures with follicular fluid survived six or eight days with slight cell migration but no real growth. When the corpus luteum extract was used in place of the embryonic extract the result was quite different there being a most luxuriant and rapid growth of the cells which equalled and in some instances exceeded the rate of growth in the cultures containing the embryonic extract. Apparently the corpus luteum extract contains substances analogous to those contained in embryonic extract i.e. substances which enable the cells to metabolize some portion of the culture medium into protoplasm and to reproduce themselves. This seems to be a much more stable substance than that contained in embryonic extract as temperatures up to 65 degrees C. for fifteen minutes did not affect its potency to any appreciable extent. ALBERT M. VOLLMER, M.D.

Shaw W Mixed Tumors of the Uterus and Vagina *J Obst & Gynec Brit Emp* 1928 xxv 498

The term mixed tumors has been applied to neoplasms consisting of cells foreign to the particular organs in which the neoplasms are found together with masses of sarcoma cells. These tumors are of especial interest because of their peculiar histological structure and because of the problems which arise when their etiology is considered. As they are extremely malignant any form of treatment is futile.

The author believes it is convenient to divide these tumors into three groups: those originating in the body of the uterus, those originating in the cervix, and those originating in the vagina. From his study he draws the following conclusions:

1. The grape-like sarcoma of the cervix usually contains striated muscle cells and cartilage and should be included in the group of mixed tumors. The average age of persons developing such a tumor is thirty-four years. The neoplasm does not occur typically before puberty or after the menopause. Its malignancy is extremely high.

2. Mixed tumors similar to those of the cervix originate in the body of the uterus, but they are rare. They develop after the menopause.

3. Some of the vaginal sarcomata of children belong to the mixed tumor group.

4. The mixed tumors contain heterologous tissues. Striated embryonic muscle cells, cartilage, fat, bone, and elastic tissue have been found in them in addition to sarcoma cells.

5. There is no satisfactory explanation of the origin of mixed tumors. HARVEY B. MATTHEWS M.D.

Gemmell A A Cystoscopy in Carcinoma of the Cervix *J Obst & Gynec Brit Emp* 1928 xxv 465

From a study of 111 cases of cancer of the cervix the author draws the following conclusions:

1. In clinically inoperable cases, cystoscopy is unnecessary, but in clinically borderline cases it is of great value and may be the chief factor indicating the operability of the condition.

2. All cases judged operable should be subjected to cystoscopy to determine whether there is any extension of the condition in an anterior direction which has escaped detection on bimanual examination.

3. Cystoscopy cannot be replaced by a study of the urinary symptoms.

4. The limit of operability is denoted by transverse ridging. Bulging of the bladder wall is only mechanical. Circulatory changes are a part of the pelvic hyperemia associated with the disease. Bulbous edema is due to invasion of the bladder wall by the malignant disease or its near approach thereto. The appearance of the ureteral orifices is no indication of the difficulties likely to be encountered in the dissection of the uterus.

5. The cystoscopic appearance is of value also in the prognosis. HARVEY B. MATTHEWS M.D.

Ward G G and Farrar L K P Radium Statistics of Carcinoma of the Cervix Uteri. Two More Five Year Series *J Am M Soc* 1928 vci 296

In the technique used by Ward and Farrar in the treatment of cancer of the cervix uteri, both radium needles and a tube are used, and the dosage varies from 400 to 400 mgm hrs. The radium tube is anchored to the cervix and the needles are placed in the broad ligaments and in the cancerous tissue in the vagina. The vagina is distended with gauze to prevent contact of normal tissue with the radium, and a retention catheter is left in the bladder to keep it empty during the treatment. In the cases of anemic patients, blood transfusions are given before the irradiation is begun. After the irradiation, the patient is urged to be out of bed early to insure good drainage in case of purulent discharge, and a potassium permanganate douche once or twice a day is ordered. When she leaves the hospital, the patient is instructed to report once a month for examination.

After irradiation, the carcinoma retrogresses. As the slough disappears, it is replaced by connective tissue, and the cervix and vault of the vagina become pale and contracted.

The authors recommend small doses in preference to massive doses of radium, with repeated irradiation as indicated. This they believe lessens the chance of destroying the normal tissue. They have been unable to predict the end result of therapy based on the type of cancer cell found. They believe that in cancer of the cervix, chronic irritation is an extremely important etiological factor, especially in women who have been lacerated at child birth.

In tabulating the results obtained by irradiation, the authors group their cases according to Schmitz's classification, which gives a sufficiently definite anatomical description of the extent of the lesion. They report the outcome of the treatment only after five years in order that their results may be compared with those obtained by surgery, which are usually reported by surgical clinics five years after operation. In their statistics of deaths from cancer, they include the cases of all patients who could not be traced or who died from any cause. They state that this may seem unfair in some instances in which it is difficult to trace cases or in hospitals that do not have a follow-up system, but if the rule is generally applied, it can affect only a small percentage of cases and may lead to a better follow-up system. This procedure was followed by Heyman in a statistical analysis of more than 8,000 cases. The authors give also the operability rate and the primary mortality in their cases for comparison with cases treated by radical operation.

Of 134 patients treated by radium irradiation, alone, 23.1 per cent were still living at the end of five years. In the statistics of 17 clinics, Heyman found the incidence of five-year cure to be 16.3 per cent. In the authors' cases of operable carcinoma

limited to the cervix a five-year cure was obtained in 53.1 per cent whereas in similar cases treated surgically Heyman found a five year cure in 35.6 per cent. The primary mortality from the use of radium was 1.6 per cent and the primary mortality of radical operation 17.2 per cent. These statistics demonstrate that irradiation of early carcinoma of the cervix gives better end results than radical operation with a lower primary mortality and less morbidity.

CHARLES F. DU BOIS, M.D.

Mowat G. T. The Results of Radium Treatment in Carcinoma of the Cervix Uteri. *Glasgow M J* 1928 cx 142.

Mowat reviews the results obtained in fifty cases of carcinoma of the cervix treated with radium. Forty eight were inoperable on account of extension of the lesion to the vagina or the broad ligaments.

In seventeen cases which were treated in the period from July 1925 to September 1926 the treatment consisted in the use of 30 mc in the uterine cavity 15 mc in the base of each broad ligament and 5 or 10 mc in and around the cervix totaling 100 to 140 mc and left in position for four days. The dosage amounted to from 7,000 to 9,000 mc hrs. Three applications were given at six week intervals. (Note: It is not stated that each of the three treatments amounted to 7,000 mc hrs.)

In seventeen cases treated in the period from September 1926 to March 1927 radium bromide was employed 0.4 mm platinum iridium needles containing 5, 10 or 20 mgm of the salt being inserted in the same manner as the emanation. From 90 to 150 mgm were used and left in place for from twenty four to forty eight hours. The total dosage ranged from 3,000 to 8,000 mgm hrs.

In six cases from 90 to 140 mgm were used within the uterus and in approximation to the mass in the vagina for from twenty four to forty eight hours.

In ten cases from 100 to 140 mgm were applied within the uterus and vaginally against the mass and three weeks later deep x-ray treatments were given at intervals of six weeks.

The reaction showed three stages: (1) sloughing and increased discharge indicating destruction of cancer cells; (2) disappearance of the slough followed by granulation during the third week; and (3) fibrosis. Fibrosis the desired result was complete in 64 per cent of the cases and partial in 37 per cent. Absence of ulceration and complete scar formation characterized this stage. The microscopic findings in the various typical stages are described in detail and shown in photomicrographs.

The following conclusions are drawn:

1. Temporary or permanent local destruction of malignant cells is accomplished in the majority of cases. Scar tissue eventually forms.

2. In a majority of cases isolated clumps of malignant cells remain quiescent in fibrous tissue but a smaller number regenerate and result in clinical recurrence.

3. Radium has a local destructive effect on malignant cells.

While complete disappearance of clinical and microscopic malignancy from the cervix and vagina occurred in most of the cases, the large majority of the patients are dead. Of thirty four patients with inoperable carcinoma who were treated in 1925 and 1926 none is alive. Better local results were obtained from one treatment with 140 mgm of radium than from repeated smaller doses. Postmortem examination in twenty-one cases revealed infiltration of one or both broad ligaments and the uterosacral ligaments but the body of the uterus was generally free from the disease. In the majority of the cases hydronephrosis had developed either from pressure by the tumor or scar tissue contraction due to the radium. In eight cases the vaginal vault was free from disease. In six cases there was a vesicovaginal fistula and in two cases a rectovaginal fistula. In eight cases secondary nodules were present in the abdominal gland, the liver or the lung but in no instance were the bones affected.

Six of the patients died as the result of the radium irradiation—four from sloughing and two from telulitis and abscess formation—and the others from local pelvic extension. In eight of the fifteen other cases there was local eradication of the primary growth. Secondary growths were present in eight cases.

The postmortem findings showed that in both treated and untreated cases extension occurred principally through the broad and uterosacral ligament and with late glandular involvement. Secondary distant metastases were found in both series.

The author concludes that squamous celled cancer of the cervix spreads mainly along the lymphatic channels and by direct infiltration from the cervix. The glands of the pelvis are involved late and then probably as the result of the pressure of the enlarging growth rather than as the result of emboli.

The chief problem in radium treatment is whether all of the malignant cells can be brought within the range of the radium. The range is from 3 to 7 in.

In inoperable cancer of the cervix radium irradiation is not curative but it gives from nine to eighteen months of active life and relative comfort.

In operable cases either radium or operation effects a cure if the primary growth is the only malignant tissue present. A. JAMES LARKIN, M.D.

#### ADNEXAL AND PERIUTERINE CONDITIONS

Douglass M. Torsion of the Fallopian Tube with the Report of a Case Producing Acute Gangrene of the Tube. *Am J Obst & Gynec* 1924 xxi 10.

Douglass reports a case of torsion of the fallopian tube in a para in thirty five years of age. For two weeks prior to her admission to the hospital the patient had cramp-like pains in the right lower quadrant of the abdomen. At the time of her admission she had a fever of 38.5 degrees C. a leuko-

cyte count of 14,000 and leucorrhœa. After expectant treatment for eight days the temperature returned to normal and the leucocyte count dropped to 10,000. Vaginal examination then revealed posterior to the uterus a soft cystic mass about the size of an orange. The uterus was of normal size.

Laparotomy revealed a dense black gangrenous mass bound down by adhesions of the uterus and the right tube. After the adhesions were broken the right tube was found twisted on itself three times, this torsion accounting for the gangrene. Microscopic examination showed acute necrosis of the right tube; the endosalpinx had been destroyed.

The factors responsible for torsion of the fallopian tube are: (1) the anatomical position of the tube with its attached mesial extremity and its lax distal extremity; (2) the changes in abdominal pressure associated with pregnancy; (3) menstruation with its attendant congestion and venous stasis; and (4) anatomical anomalies such as a long mesosalpinx and enlarged hydroids of Morgagni. The more frequent occurrence of the condition on the right side as compared with the left side is probably due to the greater 'roominess' on the right side.

The initial symptoms are usually severe pain and shock such as occur when an ovarian cyst is twisted on its pedicle. If undiagnosed the condition may go on to gangrene very rapidly; the tube may disengage itself or the hematosalpinx may rupture and produce symptoms of severe hemorrhage or peritonitis. When the abdomen is opened the other tube should be examined as the underlying pathological condition may be bilateral. E. L. CORNELL, M.D.

Smith W. S. and Denton J. A Case of Pyosalpinx Caused by Oxyuris Vermicularis Complicated by Torsion of the Oviduct. *Am J Obst & Gynec* 1928 xvi 203.

The patient whose case is reported a nullipara twenty-three years old gave a history of pain in the right lower quadrant of the abdomen which was worse in the standing position than in the sitting position and within a few days became so severe that she was unable to work. Vaginal examination revealed a mass in the right broad ligament and a smaller one on the left side. The uterus was anteverted and displaced to the left. Cervical and urethral smears were negative for gonococci.

At laparotomy the right tube was found distended cystic, and adherent to the uterus and intestines in its outer two thirds. The inner third was small, flat and completely twisted on itself from right to left. The left tube and ovary were greatly enlarged and adherent to the left side of the intestines. Hysterectomy, bilateral salpingectomy, left oophorectomy and appendectomy were done. The right ovary was left in its dense bed of adhesions. In their removal the left tube and ovary were ruptured. Cultures of pus from the tube were negative.

The patient made a good recovery, left the hospital on the twenty-first day, and was back at work at the end of another month.

Pathological examination of the left oviduct showed that the increase in the size of the tube was due to an extensive inflammatory process in the tubal wall. There was a marked infiltration of the mucosa and submucosa by lymphocytes, large mononuclear foreign body giant cells, and a fibroblastic reaction. The puriform material was not pus but a product of anemic necrosis. In all of the microscopic preparations thin shells of small round worms were found. The shells of the organisms gave a positive test for chitin. The worms were believed to be oxyuris vermicularis. In the tissues surrounding the parasites there was a marked foreign body reaction. No ova were found. The stools were negative for parasites and ova. Some of the lesions were thought at first to be tubercles, but no tubercle bacilli could be discovered and guinea pig inoculation was negative.

Cases of oxyuris vermicularis of the fallopian tubes have been reported by Tschamer Schneider and Marro. The authors regard their case as of interest because of its unusual etiology, the complicating torsion of the tube, and the brief duration of the subjective symptoms. They state that it is unusual for such marked pathological changes to occur in an apparently healthy woman without more pronounced subjective symptoms and with such little disturbance of menstruation.

E. L. CORNELL, M.D.

Wolfe S. A. Primary Bilateral Carcinoma of the Tube. *Am J Obst & Gynec* 1928 xvi 374.

Wolfe reports a case of bilateral carcinoma of the fallopian tubes in a woman aged fifty-six years. On entrance to the hospital the patient complained of a vaginal discharge, abdominal pain, swelling of the abdomen, and loss of weight. The patient's history and her family history were negative. She had had one child thirty-four years previously and the pregnancy, labor, and puerperium were normal. Her death was preceded by marked ascites.

A complete autopsy was made. The anatomical diagnosis was senile involution of the uterus, carcinomatous implants, bilateral papillary adenocarcinoma of the tubes, metastatic carcinoma of right ovary, and secondary peritoneal carcinomatosis.

Detailed pathological examination showed that the omentum and uterus were densely covered anteriorly and the serosa of the uterus had been largely replaced by malignant tissue. The right tube was much enlarged and its lumen filled with inspissated material. The mucosa had many fine papillary processes which were carcinomatous. The left tube was in a similar condition. The right ovary contained numerous metastases in the medulla, but the left ovary was uninvolved.

E. L. CORNELL, M.D.

Novak E. The Present Status of Ovarian Therapy. *J Am Med Ass* 1928 xci 607.

Ovarian preparations for oral administration are made from the entire ovary from the corpora lutea

alone or from the ovarian residue i.e. the portion of the ovary remaining after the removal of all corpus luteum tissue. The first two types are used more extensively than the third type. All of them are available in the form of tablets capsules and powders. There is no standardization of these preparations nor is there likely to be in their present form as laboratory tests show that they are without any demonstrable biological action. Ovarian residue may contain an incidental though always small and uncertain amount of follicle tissue but if it is desired to administer follicle substance by mouth there are far more potent and more precise ways of doing so than by means of ovarian residue. The placental tissue contains a large amount of follicle hormone and the use of placental extracts seems to have some scientific basis. Follicle substance is difficult to obtain even in the small amounts necessary for hypodermic administration. Loewe Lange and Faure have shown that while its oral administration is effective even producing oestrus in castrated animals the amount necessary for oral administration is at least twenty times the hypodermic dose. There is considerable reason to believe that the active principle of the ovary is destroyed by the alimentary juices.

On the basis of the new knowledge of the potency of follicle hormone manufacturers are striving to produce preparations which will yield clinical results. Some of these preparations are now on the market but in limited amounts and at a rather high cost. They are sold under various names such as folliculin oestrin oestrogen feminin menformon and thyliquin. All of them are for hypodermic use only.

It is generally agreed that the lipoidal solutions are best. They do not deteriorate so readily as the aqueous extracts and as they are absorbed more slowly their effect is less evanescent.

There is much evidence to indicate that the corpus luteum plays a part in the human cycle which is no less important than that of the follicle. A number of investigators have been able to prepare active corpus luteum extracts which produce effects quite different from and in some respects antagonistic to those produced by the follicle hormone.

Hisaw in a recent preliminary communication has attacked the problem from a new point of view. He found that the pelvic ligaments of the guinea pig are relaxed by injections of corpus luteum extract but only when the animal is under or recovering from the influence of the follicle hormone. He concludes that in order to obtain certain biological results the hormones of the follicle and the corpus luteum must be given in proper sequence. Apparently the follicle hormone is necessary to put the uterus in proper physiological condition to respond to the corpus luteum hormone.

Among the manifestations which may reasonably be ascribed to hypofunction of the ovary are

1 Amenorrhoea (absence of menstruation) hypomenorrhoea (scanty menstruation) and oligomenor-

rhoea (abnormally infrequent menstruation) delayed puberty and premature menopause

2 The vasomotor symptoms of the menopause (either natural or artificial)

3 Sterility (probably in only a small percentage of cases)

4 Possibly certain instances of so called primary dysmenorrhoea genital hypoplasia obesity repeated abortion and menstrual headaches

In the treatment of ovarian hypofunction the follicle hormone has been used but the results have usually been disappointing because the dosage employed has been inadequate. The hormone should be administered in large doses preferably at least 100 rat units daily for eight or ten days and then stopped. If menstruation does not occur in four or five days the injections may be resumed.

Novak believes that neither follicle nor corpus luteum injections alone are as effective as a combination of the two in proper sequence. The best plan is to give eight or ten injections of the follicle hormone followed by perhaps six of a corpus luteum extract.

In the treatment of the characteristic symptoms of the menopause ovarian therapy by the oral route is of much benefit. It should be supplemented however by the usual measures of hygiene and procedures to build up the general health. Even more important is reassurance of the patient regarding the significance and temporary nature of the symptoms.

In sterility organotherapy is still in the empiric stage. The recent work on the relation of the pituitary gland to the ovary offers far more hope for the successful treatment of endocrinopathic sterility than any other development of recent years but as yet no means of clinically applying the experimental findings is apparent.

In primary dysmenorrhoea genital hypoplasia obesity repeated abortion and menstrual headaches in which the etiological rôle of hypogenitalism is far less clearly definable there is little reason to expect much benefit from organotherapy. In the present state of our knowledge ovarian therapy is employed on empiric or semi-empiric grounds.

Very little is known about clinical syndromes referable to excessive function of the ovary. There is perhaps only one condition in which the scientific evidence for such a hyperfunction is fairly complete i.e. the so-called functional uterine bleeding which occurs most frequently at the menopausal age but is not rare at or shortly after puberty and at other times during reproductive life. The treatment of this condition would seem to be the injection of corpus luteum extract if an extract of undoubted potency is made available. By daily injections of a lipoid containing corpus luteum extract for six or eight days before the onset of the abnormal menstruation the amount of the bleeding is often kept within normal bounds and the patient may often be carried along until the endocrine balance is re-adjusted.

ALBERT M. VOLLMER M.D.

**Lucio B A** Autotransplantation of the Ovary Into the Cavity of the Uterus (Contributo all'operazione di autotraspianto dell'ovario nella cavità uterina) *Clin ostet* 1928 xiv 498

The case reported was that of a woman of thirty-one years who had been married for ten years but had never been pregnant. The patient suffered from painful and prolonged menstruation, leucorrhoea, sacrolumbar pain and headache.

Gynecological examination showed bilateral salpingo oophoritis. At operation the left tube was found to contain about 10 c cm of pus. The tube and ovary on that side were removed. The right ovary was transplanted into the cavity of the uterus but was left connected with its ligaments in order to assure its nutrition. The patient was relieved of symptoms and her general health has improved greatly. The transplanted ovary functions.

None of the results can be attributed to the implantation of the ovary into the uterus as they would have been brought about by the removal of the diseased adnexa even if the right ovary had been left in its normal position. The patient has not become pregnant but Tuffier, Estes and others have reported pregnancies following this operation.

The author concludes that the operation is rational and justified as it creates conditions which make pregnancy possible but that it should be done only in selected cases. **AUDREY G MORGAN M D**

**Dolgopol V B** Ectopic Corpora Lutea *Am J Obst & Gynec* 1928 xvi 218

Dolgopol reports a series of six cases of ectopic corpora lutea and reviews twenty-four cases from the Russian and German literature. Relatively few cases have been reported in the English and American literature. The author believes that the anomaly is more common than is supposed and urges all surgeons having occasion to study the ovary at operation to look for it.

Corpora lutea may become partially or totally separated from the ovary. The inhibiting influence of ectopic corpora lutea on menstruation and ovulation has not been definitely established.

**E L CUNNELL M D**

## EXTERNAL GENITALIA

**Babcock W W** The Vaginal Approach to the Peritoneum *Surg Clin N Am* 1928 viii 783

Babcock states that abdominal surgeons should be familiar with the indications for and the technique of the vaginal approach to the peritoneum as the cul de sac incision may be life saving and ligation or clamping of the bleeding tube in ectopic pregnancy is accomplished more quickly and safely. Septic pelvic accumulations are more safely drained

and at times unusual abdominal complications are best handled by vaginal section.

He describes his method of vaginal enterostomy for postoperative ileus from pelvic peritonitis and concludes from his experience that the cul de sac incision permits exploration of the pelvic peritoneum and drainage of the obstructed loop of bowel with immediate relief and little or no shock. Appendiceal abscess low in the pelvis or an inflamed appendix below the ileocecal line may be effectively and safely reached through a vaginal incision.

The author describes also his method of vaginal ureterocystostomy for ureteral obstruction close to the bladder wall. **ALICE I MAXWELL M D**

**Basset A and Guérin P** Sarcoma of the Vagina in the Adult (Contribution à l'étude des sarcomes du vagin chez l'adulte) *Gynec et obst* 1928 xviii 18

The case reported was that of a woman forty-four years of age who came for treatment in January 1905 because of a tumor in the vagina which she had discovered herself. She had no symptoms except a certain amount of pain on coitus and a feeling of weight at the anus. Operation was performed on January 27 1905 and was followed by uneventful recovery. Histological examination showed the tumor to be a round cell or lymphoblastic sarcoma. The patient was given two radium treatments separated by an interval of eight days—a vaginal application of 10.80 mc and a rectal application of 4.68 mc. When she was seen on September 14 1925 there was no sign of recurrence.

Sarcoma of the vagina has no characteristic symptoms. Often the patients do not come for treatment until ulceration has occurred. Ulceration is followed by hemorrhage. Ulceration seems to occur earlier in sarcoma of the vagina than in sarcoma in other parts of the body though not so early as in epithelioma. There may be a serous or sanguinolent discharge or bladder symptoms. The duration of the disease varies from two months to two years depending upon the histological character of the tumor. Recurrence is very frequent. As yet it is impossible to say whether the cure in the case reported is final but the authors are hopeful on account of the radium treatment. The lymphoid type of sarcoma is particularly sensitive to radium.

Surgical removal is advisable before the use of radium as it is impossible to determine the histological nature of the tumor without microscopic examination and biopsy is more or less dangerous in sarcoma. However the surgical removal need not be so extensive as was formerly though necessary since very extensive operation has not proved more effective in preventing recurrence than more limited surgery. **AUDREY G MORGAN M D**

# OBSTETRICS

## LABOR AND ITS COMPLICATIONS

Hofbauer J The Effect of Bile Salts upon the Automatic Contractions of the Uterus and upon the Action of Pituitary Extract During Pregnancy A Possible Explanation for the Cause of Labor *Am J Obst & Gynec* 1928 xvi 245

In an attempt to explain the causation of the onset of labor Hofbauer made an experimental study using bile salts on portions of excised uteri suspended in Locke's solution

It has been known for some time that in pregnancy there is a steady increase of the bile salts in the circulation In the author's experiments it was found that the addition of small quantities of sodium glycocholate to portions of the strips of muscle suspended in Locke's solution suppressed the spontaneous uterine contractions The relaxation of the uterine tone could not be neutralized by the addition of small doses of pituitrin but large doses of pituitary extract produced strong uterine contractions equal to the contractions occurring during labor

Hofbauer believes it logical to assume that the activity of the pituitary body may be one of the factors responsible for the onset of labor

E L CORNELL MD

Lynch F W Anaesthesia in Obstetrics *California & West Med* 1928 xiv 173

The author believes that the metabolic changes normally present in pregnancy make the patient a poorer anesthetic risk than she would be in the non-pregnant state

Abdominal complications demanding surgical interference during pregnancy can be operated upon without much abdominal relaxation In a great percentage of cases local anesthesia is used If necessary this may be supplemented with nitrous oxide and oxygen or ethylene and oxygen

Ether should be given only when it is needed to secure muscular relaxation as in versions and should be avoided if possible in cesarean sections Morphine should not be given before cesarean section

Nitrous oxide with oxygen has been favored by the author for analgesia in the second stage and for anesthesia in cesarean section and forceps extractions

CARL H DAVIS MD

Mathieu A and Schaeffer C C The Rigid and Stenosed Cervix in the First Stage of Labor *Am J Obst & Gynec* 1928 xvi 390

In a study of the rigid and stenosed cervix in the first stage of labor the authors were unable to demonstrate the existence of a band of continuous circular fibers of the sphincteric type They are of

the opinion that the caliber of the cervical canal is maintained passively by the anatomical conformation of the organ They state that so-called parietal cervical contraction occurring during labor is frequently psychic as is shown by other symptoms of a similar nature and the patient's mental makeup Among pathologico-anatomical conditions which may be responsible for rigidity and stenosis of the cervix are laceration, displacement of the os adhesions and overlapping of the cervical lips

In the diagnosis fibrosis of the cervix must be kept in mind The condition must not be mistaken for the patient's reaction to the early stages of labor or for active resistance to descent due to the pain caused by the pressure on the cervix

If fibrosis is absent watchful expectancy together with the administration of sedatives is indicated Manual and instrumental dilatation and the use of weighted bags are condemned For certain cases the authors recommend cervical incisions or vaginal or abdominal cesarean section E L CORNELL MD

Bailey H The Long Labor *Am J Obst & Gynec* 1928 xvi 324

Bailey states that long labor with its accompanying acidosis and shock is apt to be a cause of sudden death So called anesthetic deaths may possibly be explained on this basis When labor is prolonged the acidosis increases hourly with resultant lowering of the carbon dioxide in the blood and coincident lowering of the blood pressure Patients who show signs of acidosis such as bright redness of the lips, dryness of the skin and marked exhaustion should be treated for this condition before operation is attempted Morphine in doses of  $\frac{1}{2}$  gr relieves the acidosis by the rest it affords and thereby raises the carbon dioxide combining power of the blood Morphine should not be used in long labors for the purpose of allowing the patient to rest and then return to a stronger labor afterward but merely to prepare her for an operative delivery

If the labor lasts longer than twelve hours the patient should have regular feedings of high calorie and easily assimilated food Glucose may be given intravenously When the systolic blood pressure is under 85 operative intervention should be postponed until the reading is brought to 100 This may be accomplished by giving 350 ccm of gum glucose intravenously at the rate of about 4 ccm per minute and at a temperature of 104 degrees F

Of all forms of delayed labor the one most difficult to treat is that due to so called primary inertia and rigidity of the cervix Some obstetricians believe that the Beck type of cesarean section is indicated in these cases but the loss of immunity due to increased exhaustion and acidosis with sub-

sequent entrance of infection after rupture of the membranes and repeated vaginal examinations are contra indications. Probably it is better to insert a bag and pack the vagina with wet gauze delivering the patient with forceps when dilatation is complete.

The obstetrician is directly responsible for the maternal deaths which occur in the conduct of labor. When marked acidosis is present together with a low blood pressure operative intervention should not be undertaken until the patient has been rendered a good risk for obstetrical surgery. This precaution may lead to a decrease in the number of sudden and unexplainable deaths occurring at the end of long labors.

E. L. CORNELL, M.D.

Harris J W and Brown J H. The Bacterial Content of the Uterus at Cesarean Section. *Am J Obst & Gynec* 1928 xvi 332

In an article published in February 1917 the authors reported the clinical details of a bacteriological study of fifty uteri at cesarean section. In twenty eight cases the cultures were sterile whereas in twenty two bacteria of various kinds were found. In this article the twenty two infected cases are reviewed in detail.

In order to insure freedom from contamination by the vaginal secretion all of the cultures were taken through the uterine incision. As soon as the child was delivered but before the hands or instruments were introduced into the uterus a sterile cotton covered swab was passed through the uterine incision and rubbed over the lower uterine segment care being taken to prevent contact with any portion of the uterus except that from which the culture was desired. As soon as possible thereafter smears were made from the swab and then an inoculation was made into anaerobic and aerobic human blood agar plates anaerobic and aerobic and dextrose-acid agar plates cooked meat sealed with vaseline anaerobic and aerobic human serum bouillon and aerobic lactose fermented bouillon containing bromocresol purple as an indicator. In no instance did the primary smears show bacteria which could not be grown and identified on culture. In all except one of the infected cases the puerperium was febrile but all of the patients recovered. In ten cases the incisions healed poorly. From eight of these cases either actinomyces pseudonecrophorus or beta hemolytic streptococci were isolated. One case in which the wound healed poorly yielded a pure culture of an anaerobic streptococcus of the gamma type which actively fermented all the test substances except mannite. In three cases clostridium welchii was found but there was no gross evidence of gas bacillus infection. No obvious relation was noted between the course of the puerperium and the presence of diphtheroid bacilli in the uterus.

To sum up the cultures showed staphylococcus albus in nine cases staphylococcus aureus in two cases yeasts in two cases clostridium welchii in three cases Doederlein's bacillus in one case acti-

nomyces pseudonecrophorus in three cases diphtheroids in twelve cases and streptococci in eighteen cases.

E. L. CORNELL, M.D.

Gordon G A. A Survey of Cesarean Section in the Borough of Brooklyn. City of New York. *Am J Obst & Gynec* 1928 xvi 307

Gordon collected a series of 1805 cesarean sections from the statistics of thirty four hospitals over the period of five years from 1921 to 1926. In 934 cases the indication for the operation was contracted pelvis in 210 cases eclampsia and other toxemias of pregnancy in 117 cases antepartum hemorrhage and in 544 cases various other causes.

In the first group the fetal mortality was 3.8 per cent and the maternal mortality 5.8 per cent. In the second group the fetal mortality and also the maternal mortality was 26 per cent. In the third group which included 98 cases of placenta previa and 19 cases of accidental hemorrhage there were 30 fetal deaths a mortality of 25.6 per cent and 7 maternal deaths a mortality of 6 per cent.

In the whole series of cases 21 cesarean hysterectomies were performed with 3 maternal deaths a mortality of 14 per cent. If 4 cases of rupture of the uterus with 2 deaths are deducted the maternal mortality of cesarean hysterectomy was 6 per cent. The classical operation was done in 472 cases—273 with and 199 cases without previous vaginal examination. In the first group there were 16 deaths and in the second group 27 deaths. The lower segment operation was done in 123 cases—66 with and 57 cases without previous vaginal examination. In the first group there was 1 death whereas in the second group there were 6 deaths.

E. L. CORNELL, M.D.

## PUERPERIUM AND ITS COMPLICATIONS

Harris J W and Brown J H. The Bacterial Content of the Vagina and Uterus on the Fifth Day of the Normal Puerperium. *Bull Johns Hopkins Hosp* Balt 1928 xliii 190

The fact that streptococci were present in the uteri of patients suffering from very mild symptoms of puerperal sepsis suggested research to determine if it is possible for streptococci to be present in the puerperal uterus without giving rise to any clinical manifestations of infection. In thirty normal obstetrical cases intra uterine cultures were taken by means of Little's tube together with vaginal cultures on the fifth day after delivery. The utmost precision of method was used. Bacteria were found in twenty of the thirty cultures from the uterus but streptococci were present in no case. Of the thirty cultures from the vagina twenty two showed streptococci but in no instance were they of the aerobic beta hemolytic variety which is the etiological factor in the majority of fatal cases of puerperal infection.

While bacteria of a sort not present in the fundus were abundant in the vagina no variety was found



in the fundus which was not represented in the vaginal flora. From this it must be assumed that there is an upward extension of the bacteria from the vagina to the uterus doubtless through the capillary layers of fluid extending from the vulva to the uterine cavity. It is probable that whatever organisms are present in the vagina at labor ascend into the uterine cavity but are rapidly killed off by the defensive mechanism. From their study the authors conclude also that viable streptococci do not remain in the uterine cavity until the fifth day of the normal puerperium without giving rise to clinical manifestations of infection.

GOODRICH C. SCHAUFFLER M.D.

Goodall J. R. and Wiseman M. Cervical Infections in the Puerperium. *Am J Obst & Gynec* 1928 xvi 339

The authors state that the high incidence of morbidity, the frequency of subinvolution of the uterus and the common occurrence of thrombophlebitis especially in multiparæ are probably due to an attenuated infection which the vulvar aseptic technique cannot reach. The frequency with which primary infection in the cervix early in the puerperium can be demonstrated seems to indicate that in many cases of mild morbidity the underlying cause is chronic cervicitis. E. L. CORNELL M.D.

Watson B. P. An Outbreak of Puerperal Sepsis in New York City. *Am J Obst & Gynec* 1928 xvi 157

Watson reports an epidemic of puerperal sepsis occurring in the Sloane Hospital for Women, New York City in January and February 1927. During this period 163 patients were delivered. Of these 25 (15 per cent) developed a streptococcus infection. There were 9 deaths, a mortality of 36 per cent. In addition 72 other patients had a morbid puerperium with a temperature of 100.4 degrees F or over but in these cases streptococci could not be isolated.

In 13 cases delivery was normal. In 6 forceps were used and in 4 a cesarean section was performed. In 1 case in which there were twins version was necessary. In 7 cases no vaginal examinations or vaginal manipulation was done. In all of the others except 1 vaginal examination was made once. In the 1 exception the case of a patient delivered normally 3 vaginal examinations were made.

In a thorough investigation of the operating rooms and the personnel of the hospital it was discovered that 20 nurses and 2 attending surgeons had hemolytic streptococci in the nose and throat and 4 nurses had tonsillitis. One nurse developed a streptococcus puerperium but when she was operated upon later no demonstrable primary focus of infection could be found. One interne on the service was also a streptococcus carrier and was temporarily discharged.

The infected cases were isolated and the delivery rooms were thoroughly cleaned and some of them

were closed. As cases of puerperal infection continued to develop the hospital was closed to all patients for a period of ten days from February 14 to February 24 and during that time the operating rooms were thoroughly fumigated and repainted.

The author was unable to determine from the data available whether the carriers brought the infection into the hospital or picked up the organism from infected patients. The latter may have been true in some cases. The occurrence of primary puerperitis in a nurse shows that there may be points of entry for the hemolytic streptococcus other than the vagina and the puerperal uterus but the finding of the organism in the vagina of nearly all infected patients proved that this was the common portal.

The particular streptococcus in this series of infections was a very virulent one. With 1 exception death resulted in every case with a positive blood culture. The late appearance of streptococci in the blood of most of the patients and the postmortem findings indicated a lymphatic dissemination.

In the treatment the author used antistreptococcus serum in large doses and quinine in dysentery. Serum alone or serum and blood transfusions. Some of the patients were benefited by repeated small blood transfusions. In the most virulent cases no improvement resulted from any treatment. L. L. CORNELL M.D.

## NEWBORN

Flagg P. J. The Treatment of Asphyxia in the Newborn. Preliminary Report of the Practical Application of Modern Scientific Methods. *J. Am. M. Ass.* 1928 xci 788

The author emphasizes that the obstetrician should be thoroughly familiar with the anatomy of the upper air passages as it appears with and without its reflexes. Both in infants and in adults the problem of scientific artificial respiration depends upon the phase with which the larynx may be exposed and intubated.

The article contains five illustrations of apparatus used in the treatment of asphyxia of the newborn. The apparatus which is used by the author has the advantage that it can be operated by one person.

CARL H. DAVIS M.D.

## MISCELLANEOUS

Crew F. A. E. The Biological Aspect of the Falling Birth Rate. *Brit. M. J.* 1928 ii 477.  
Roberts W. J. The Economic Aspect of the Falling Birth Rate. *Brit. M. J.* 1928 ii 479.  
Horder Sir T. The Medical Aspect of the Falling Birth Rate. *Brit. M. J.* 1928 ii 483.  
Barrett Lady. Indications from Statistics on the Falling Birth Rate. *Brit. M. J.* 1928 ii 485.

CREW says that to the biologist there is nothing remarkable and necessarily ominous in the past and present decline of the birth rate. It is the sign only of the approaching end of a population growth cycle.

not the end of a people or a culture. The law of the growth cycle postulates that within one and the same cycle and in an especially limited area, growth in the first half of the cycle starts slowly but the actual increment per unit of time increases steadily until the midpoint of the cycle is reached. After that point the increment per unit of time becomes steadily smaller until the end of the cycle. There are two methods by which population reduction or descent in the cycle takes place. The first is the catastrophic method illustrated by epidemics, war famine etc. occurring as the result of over population and the second a fall of fecundity and fertility with increasing density of population.

It appears that conditions incident to overcrowding depress fecundity. In the case of human fecundity this passive response to environmental discomfort can be replaced by a deliberate and conscious control of the reproductive rate. Therefore the question arises as to whether the fall in the birth rate is due in the main to the spread of a deliberate and conscious limitation of fertility. The conclusion that methods of birth control attain the end desired by those who employ them is inherently probable (middle and upper social classes). It is very doubtful however if birth control has affected the population growth cycle—the crude birth rate. The fall in the birth rate has been too gentle. It has proceeded with evolutionary steadiness and it has been universal. Accordingly it seems that the fall is not the result of local disturbance but the expression of general biological factors. The birth rate is falling now because this is the end of a population growth cycle.

Though yet in its infancy the science of group biology has made important contributions regarding such factors affecting the rate of population as (1) the proportion of multiple birth stocks present (2) the frequency of opportunities for effective fertilization as indicated by frequency of ovulation and length of period of fertility and (3) living conditions and other factors affecting happiness. Perhaps the social and economic developments during recent times have permitted or even encouraged the survival of stocks which were and are relatively infertile or react more readily to the disharmonies attendant upon industrialism.

Social advancement causes a decrease in the rate of reproduction because those who advance socially are presented with a greater variety of modes of self expression and self indulgence. If a large section of the community which is socially unsuccessful but not unsound in the biological sense is left with no other mode of self release save that afforded by excessive drinking and sexual overindulgence its rate of reproduction will be higher than the rate of the community as a whole and the trend will obviously be undesirable. Crew offers no panacea but states that if man the rebel is to consolidate the gains he has won from Nature a true control of fecundity and fertility must soon be achieved.

ROBERTS says that the science of economics does not yet offer a generally adopted doctrine of popula-

tion which can be applied with confidence to actual situations.

Apprehension in regard to the diminishing birth rate should perhaps be allayed by the concomitant decrease in the death rate. The decline in the birth rate appears to be differential in the sense that the restriction of births is confined chiefly to the middle and upper classes especially large families of undesired children being found mainly among the poor. The part played by birth control in this differential birth rate is probably not inconsiderable as birth control is practiced chiefly by the higher social classes. Alarm is felt in some quarters because of the failure of the best elements of the community to reproduce themselves. Regarding the urging of such considerations as motivating principles upon the masses the author says: "The average individual is not apt I suspect to pass immediately from his general preferences for the social and political future to any shouldering of a share—which to him personally is heavy but may turn out to be insignificant in the mass—of the costs of bringing about such a result accordance with his other inclinations and interests persistent group pressure and example and like causes may sometimes come to the aid of such ideal and remote aspirations."

It is not surprising to find that the propagation of children can be urged as a duty toward a social group or members of that group. While nations would prefer preponderance of their own types as would also religious and political bodies yet it is hardly possible for the individual or the family to bring into play a point of view sufficiently broad to encompass the relative values involved. It is the duty of the economist to take account of these political and social divisions and to seek to discover how they affect the conditions of the problem. Practically we may feel ourselves urged to promote measures which tend toward family coherence under better conditions than those of the past or present. For example the advantages to the parents of child labor are not the motives most favorable to the rearing of large families yet they formerly furnished a certain economic justification.

The economist would like to inquire into the effects on conduct and habit generally of a widespread dissociation of sexual gratification without the responsibility of parenthood. He is optimistic to the extent that he believes that men should know and choose rather than behave as blind victims of impulse and despair. His disagreement with the older pessimistic theories is evident from such statements as this: "The obstacles to the growth of population are not those lying in the meagerness with which Nature responds to human labor and co-operation and science and good will. I do not think that our own island to say nothing of what has been called our little planet is overcrowded or that our difficulties are due to any approximation to such a calamity. Our troubles are due not to the efforts of free and equal people to win a livelihood but to causes which I may distinguish as political."

that is to say habits and institutions whose origin and purpose is mastery and privilege and monopoly. That justice should prevail over the whole economic community is seen to be the main condition on which the continuous unfolding of productive capacity depends.

HOEDER states that the question of population seems to be largely outside the doctor's sphere. Dividing the question into its component elements—natality, mortality and migration—he finds little for the physician to assume in regard to the first and last of the three. In regard to mortality the physician's effort to prolong life is but a feeble contribution. In the question of saving life, however, and in the matter of improving health and thus increasing fertility, the physician should be a definite factor. If he is to enter the field on the side of the larger issues, he should be taught a good many things not now included in his curriculum and his thoughts should be early directed to the vital general questions of the regulation of birth. A definite clear-cut program should be envisaged for the physician's advocacy. The study of contraception would be only a minor factor in these broad doctrines but even in this restricted department are found striking inadequacies. Here at least is a subject deserving of inquiry concerning which the doctor's opportunities for research and observation are abundant and his findings paramount.

LADY BARRETT assigns to the physician a position of major influence on the question of population. She is of the opinion that the subject should and can be taught in medical schools. Regarding the influence of contraceptives and especially their influence in the upper classes, she points out that there have always been variations in fertility in various classes. All factors including contraception tend to diminish the upper middle and textile classes only, whereas the classes approaching destitution are unnaturally prolific.

The author discusses general factors which affect the crude birth rate and calls attention to the fact that the artificiality of sex relationship dependent upon present social and industrial conditions gives a definite impetus to this unfavorable trend. She states that obedience to natural laws and the restriction of intercourse to the periods of natural desire of

both partners would answer wisely and well the requirement for an intelligent limitation of population. The healthy and virile would procreate abundantly whereas the sick and poorly equipped would not. Such ideal restriction would seem practically unobtainable but physicians should advocate such a program.

In the author's opinion the least objectionable and most efficacious of the artificial methods of contraception are the use of the sheath and the introduction of medicated pessaries but all methods are grossly unsatisfactory.

GOODRICH C. SCHAEFFER M.D.

Mitchell R. The Prevention of Maternal Mortality in Manitoba. *Canadian M. Ass. J.* 1928, 22, 292.

In a recent survey MacMurphy found that in the period from July 1, 1925 to July 1, 1926 the maternal mortality rate in Canada as a whole was 6.4 per 1,000 live births and in the Province of Manitoba 7.7 per 1,000 live births. In Canada as a whole the most common cause of maternal death was sepsis. This was responsible for 27 per cent of the fatalities. Next in decreasing order of frequency were hemorrhage, toxemia and dystocia.

The author finds that in Manitoba puerperal hemorrhage claims by far the greatest number of victims. He therefore urges more careful management of the third stage of labor. He states that cases of placenta praevia are often neglected being brought into the hospitals only as emergencies.

He believes that operative intervention is too frequently performed and emphasizes that forceps should not be applied unless there are well defined indications for their use.

Antenatal care has reduced puerperal albuminuria and convulsions to the minimum.

The measures recommended by Mitchell for the reduction of maternal mortality are (1) strict enforcement of registration of births, deaths and cases of sepsis; (2) an investigation of every maternal death and of epidemics of puerperal sepsis in hospitals by the Department of Health; and (3) an increase in the number of public health nurses to give better prenatal care and to educate expectant mothers.

CARL H. DAVIS M.D.

# GENITO-URINARY SURGERY

## ADRENAL KIDNEY AND URETER

Caylor H D. Suprarenal Renal Heterotopia. Report of a Case. *J Urol* 1928 xx 197

Suprarenal renal heterotopia is the developmental inclusion of cortical and medullary suprarenal tissue beneath the capsule of the kidney. All or only a part of the suprarenal gland may be beneath the renal capsule. The condition is frequently bilateral. It occurs more commonly in males than in females and is usually associated with a thymolymphatic constitution. It is of surgical importance as it can not be recognized before operation, the patient is susceptible to surgical shock and infection, and there is a potential reduced production of epinephrin with always the possibility of an acute epinephrin insufficiency following nephrectomy.

Kidneys to be removed should be carefully scrutinized for this anomaly during and immediately after operation because knowledge of the defect may prevent removal of the suprarenal gland during nephrectomy or if its removal is inevitable (as in the case reported by the author) the epinephrin insufficiency which may develop will be anticipated.

Hertz J. The Effects and Results of Suprarenalectomy in Gangrene of the Extremities (Effets et résultats de la suprarenalectomie dans la gangrène des extrémités). *Bull et mém Soc nat de chir* 1928 liv 934

This is a report of seven suprarenalectomies, five performed for thromboangitis obliterans, one for senile gangrene, and one for syphilitic endarteritis.

One patient who was treated for thromboangitis obliterans or Buerger's disease remained well for twenty-one months and another required amputation after two months. The three others suffered relapses after two and three months. The syphilitic endarteritis mistaken for Buerger's disease was reactivated by the operation. The patient with senile gangrene was relieved of pain for eight days. In all of the cases of Buerger's disease the operation relieved the pain immediately although only temporarily.

The author recommends suprarenalectomy for cases of syphilitic endarteritis and senile gangrene because he believes that it relieves the arterial spasm and thereby makes possible a more conservative amputation. His experience indicates that suprarenalectomy has the same immediate effect as periaxillary sympathectomy. It involves the section of from thirty to thirty-five nerves derived from the coeliac and renal plexuses and, as Leriche has demonstrated, an operation on the sympathetic at any point produces effects at a distance from that point.

Hertz concludes that periaxillary sympathectomy should be given a trial before suprarenalectomy is attempted as the effects of the two operations seem to be identical. ALBERT F. DE GROOT, M.D.

Harris A. Traumatic Rupture of the Left Kidney. Case Report. *J Urol* 1928 xx 193

Harris reports the case of a man forty-four years of age who while standing on a crowded subway platform was suddenly pushed against an iron post sustaining an injury to his left side. The injury was followed by hematuria for ten days, pain in the side and back, and a feeling of weakness. After the patient had been kept in bed for twelve days the pain and tenderness were relieved. Twenty-three days after the injury the urine was moderately cloudy and showed a trace of blood and pus. The findings of a general examination were negative except for moderate tenderness on deep pressure over the left kidney. There was no palpable enlargement of either kidney.

Cystoscopic examination showed the bladder to be normal, both ureteral orifices were normal and were catheterized with ease. On the left side a distinct hydronephrotic drop was noted. The phthalen test on both sides, the Wassermann test, and blood chemistry were negative. The specimen of urine from the right kidney was normal, but the specimen from the left kidney showed blood and pus cells. The specimens from both kidneys were negative for organisms on smear and negative for the tubercle bacillus on culture.

X-ray examination showed the right kidney out of line, obscured by gas in the bowel. The left kidney was definitely enlarged but smoothly outlined and normal in position. The upper pole was particularly enlarged. The ureteral regions were negative. Pyelography on the left side showed the kidney pelvis to be normal except that the upper calyces had been obliterated and replaced by a large, irregularly hour-glass shaped pouch. In its upper portion this pouch extended to the kidney capsule. The ureter was definitely kinked just below the pelvo-ureteral junction. Stereoscopic examination of the left kidney showed that most of the accessory pouch was anterior to the upper pelvis. In the opinion of Bell the accessory pouch was caused by the trauma.

When the patient was last examined he was in excellent health and his urine was completely negative.

While the author recognizes the great recuperative and reparative power of the kidney, he believes that in some cases mechanical defects may be followed after some time by infection or stone formation resulting ultimately in destruction of the organ. He draws the following conclusions:

1 A ureteropyelographic study should be made in every case of renal trauma after the subsidence of the acute symptoms. The time to investigate depends upon the symptoms and the judgment of the surgeon.

2 The follow up should be continued for a long period in order to determine the incidence of secondary infection and stone formation. Chronic infection without obstruction may continue for long periods without symptoms sufficient to cause the patient to consult a physician. In the control of infection, catheterization and lavage of the kidney may be of value.

3 The reparative power of the kidney is remarkable.

4 Open operation is indicated only in the exceptional extreme case of renal injury with uncontrollable hemorrhage. Infection following extravasation of urine or the formation of a hematoma may require drainage.

5 It is possible that an infected pouch sinus or sac not relieved by lavage might be removed by open operation with conservation of the kidney.

6 An accessory pouch seen in the pyelogram must be differentiated from a solitary cyst of the kidney.

CLAUDE D. HOLMES M.D.

Babcock W. W. The Tolerance of the Kidney of Trauma and Infection. *Surg. Clin. N. Am.*, 1923, viii, 791.

Babcock reports two cases of recurrent nephrolithiasis. In the first case that of a woman fifty-nine years old a large calculus was removed from the right kidney and drainage of the left kidney was done for hydronephrosis. A year later the X-ray showed stones in both kidneys. Both kidneys were then opened simultaneously and four stones were removed from the left and three from the right kidney. A year later the left kidney was drained for pyelonephrosis and a few months later it was removed. A year later five stones were again removed from the right side. Fifteen years later five more stones were removed from the right kidney. The patient had eight kidney operations.

The second case was that of a woman of twenty-six years. When the patient was eighteen years old stones were removed from the right kidney and when she was twenty years old stones were removed from the left kidney. Small abscesses formed in both kidneys and permanent tube drainage was instituted on each side. About six months later pus and calculi were removed from the left kidney and ultimately the left kidney was removed. Under treatment the right nephrostomy wound gradually healed.

The author emphasizes three factors that favor the reformation of calculi: (1) a blood clot remaining in the kidney upon which a calcareous deposit occurs; (2) dilatation of the pelvis or calyces; and (3) particles of stone left at operation. He states that stones are best removed through the pelvis of the kidney.

MAURICE I. BIELTZER M.D.

Knipfer A. The Roentgen Picture of Horseshoe Kidney (La syndrome radiologique del rene a form di cavallo). *Radiol. med.* 1928, xv, 684.

The author reports a case of horseshoe kidney which he was able to diagnose by simple roentgen examination without pyelography. The lower poles of the kidneys were pointed and extended obliquely toward the spinal column. The lateral outline of the normal kidney is never so oblique. The two lower poles had the shape of ox horns directed toward the midline. The bridge connecting the two kidneys could be felt against the spinal column.

A shadow on the right side higher up than the lower pole was found to be due to the furrow where the bridge and the right kidney joined. Frequently the bridge does not connect with the two kidneys at the same level and the groove where it joins them can be seen in the roentgen picture.

As the direction of the horseshoe kidney is downward anteriorly and upward posteriorly the tube may be inclined a little in the ventrodorsal projection. A roentgenogram should be taken also in dorsal and ventral decubitus. Sometimes the shape of the kidney is shown better in ventral decubitus.

ANDREW G. MORGAN M.D.

Schillings M. Horseshoe Kidney (Le ren en fer à cheval). 1928. Louvain. Société Scientifique de Bruxelles.

The author reviews the cases of horseshoe kidney reported in the literature up to date including several of his own. The references to American literature are unusually numerous. Many of the more typical roentgenograms are reproduced. Only the clinical aspects of horseshoe kidney are considered. To those interested in the subject of renal anomalies this monograph will save much effort in the looking up of cases reported during the past five years.

DANIEL N. EISENDRATH M.D.

Davis J. E. The Surgical Pathology of Malformations in the Kidneys and Ureters. *J. Urol.* 1928, xx, 155.

The classification of renal anomalies in general use today in which these anomalies are grouped according to position, number and form, was suggested by Kuster in 1866.

**Anomalies of position (dystopia).** As a result of inequality of growth the kidney may be higher than normal and the suprarenal body displaced medially upon the kidney pelvis. The author cites two such cases in which in nephrectomy the adrenal was removed with a fatal termination. He states that the possibility of medial displacement of the suprarenal on the kidney pelvis should always be borne in mind when examination reveals high position of the kidney together with perinephritis.

In large fetuses infants and young children it is not at all uncommon to find the kidneys in a low position or one kidney lower than the other.

The most common positions of abnormally placed kidneys are the bifurcation of the aorta, the sacral

promontory over the sacro iliac joint in the iliac fossa and in the hollow of the sacrum. Abnormally formed kidneys are quite frequently misplaced whether they are fused or separate. A floating kidney may constitute an obstetrical complication. The right kidney is more apt to be found in an abnormal position than the left kidney.

**Abnormalities of number.** The presence of more than two kidneys is the rarest of all kidney malformations. Absence of both kidneys is usually found in fetal monsters. Maulon however saw a fourteen year old girl without kidneys ureters or bladder. In this case the urachus was very large and long the umbilical vein was larger than that of an adult and since birth a urinous fluid had been discharged from the umbilicus. In aplasia of the kidney the ureter of the same side is also missing. In hypoplasia there may be a ureteral formation with a small mass mounted on its upper end. Absence of one kidney may be congenital the result of the blighting of a bud on one side or due to the destruction of one kidney by disease—as a rule a disease causing ureteral obstruction and pressure.

**Abnormalities of form.** Most malformations of the kidney begin in the early development of the ureteral bud and its surrounding metanephrogenetic cells. The usual cause of horseshoe kidneys which constitute 25 per cent of renal malformations is a change in form involving both buds. This fusion deformity is important because of the irregularity of the blood supply and the abnormal number and position of the ureters which may be responsible for abnormality of drainage. Anomalies of the ureter and pelvis include variations from the normal in the number of the ureters or pelves the type of fusion and congenital absence atrophy or stricture of the ureter. The most common anomaly in this group is complete or partial duplication of the ureter.

The most important congenital renal condition is the congenital polycystic kidney. This is characterized by the formation of numerous and diffusely distributed retention cysts which are usually visible to the naked eye. The anomaly is often associated with other developmental stigmata. It may be found at any age and is associated with cysts elsewhere in the body most frequently in the liver. The condition passes through three stages. The first is the latent stage which may continue for a short time or for many years. The second is characterized by subjective symptoms and objective signs chiefly a dragging down pain and hematuria and may continue for a few months or a few years. The third is characterized by uræmic symptoms and may extend over a few weeks or a few months. The subjective symptoms from congenital cystic kidney are mainly renal insufficiency hematuria pain and infection. The objective signs are a tumor mass in one or both kidney areas increased blood pressure changes in the urine similar to those of interstitial nephritis and a positive cystoscopic picture and history. The pyelogram shows (1) flattening and obliteration of the major calyces (2) retraction and

broadening of the various major calyces (3) elongation or rounding of the true pelvis and (4) displacement or obliteration of the pelvis.

CLAUDE D. HOLMES M.D.

Potter C. Pyelonephritis and Urethral Obstruction. *Int J Surg* 1928, 4, 286.

Potter reports the case of a woman fifty five years of age who had had chronic pyelitis for about ten years. Every catheterized specimen during this time showed pus. Through self neglect the patient passed through many acute exacerbations of urinary tract infection diagnosed variously as malaria chills and fever influenza stomach trouble bladder trouble and hysteria. She usually changed her physician as soon as he advised a complete urological examination.

The treatment given by the author consisted in the removal of foci of infection irrigation of the kidney pelves ureteral catheter drainage prolonged rest in bed the use of urinary antiseptics and colon bacillus mixed vaccine intravenous medication and a blood transfusion to overcome anemia and build up the resistance. After a month in the hospital the patient was allowed to go home but treatment was continued because the urine was still heavily loaded with pus and colon bacilli. Shortly after her discharge she had an attack of acute pain over the right kidney accompanied by a chill lasting thirty minutes nausea vomiting and a temperature of 104 degrees F.

At operation performed first on the right side and ten days later on the left side the kidneys were found to be white twice the normal size and firmly bound down by adhesions. The ureters were patent.

Decapsulation of both kidneys was done. A small incision was made in the pelvis after it had been wiped free from fat. A straight Kelly forceps was then bored through the kidney substance at Broedel's line the location of the silent vascular area until the point protruded into the pelvis. Along the tract made by the forceps a small rubber tube was pulled through the kidney. The fenestrated end was left free in the pelvis. The tube was fixed in place by two sutures introduced through the kidney cortex. The wound was closed in layers about the tube and one rubber tissue drain.

Urine drained through the tube freely. Daily installations of 10 per cent argyrol were introduced through the tube into the kidney pelvis. The bladder urine showed a large amount of argyrol for twenty four hours after each installation. The tube was left in place for eighteen days. The patient showed marked continuous improvement and urinalyses over a period of a year were practically negative. Constipation was controlled by agar and mineral oil.

Greenberg used a similar drainage procedure in the case of a man forty two years of age who had pain in the right lumbar region and complete anuria for twelve hours. The left kidney and both testicles had been removed for tuberculosis eight years previously. Cystoscopic examination revealed a stricture in the middle of the right ureter which could not

be passed by a catheter. After the insertion of a tube into the kidney pelvis through the tract made by a forceps pushed through the kidney at Broedel a line urinary drainage occurred through and around the tube and improvement in the condition began within twelve hours. The patient had lumbar drainage of urine the remainder of his life. He lived about two years after the operation and died from intestinal obstruction due to extensive intestinal tuberculosis.

The author draws the following conclusions:

1. Chronic pyelitis can be successfully treated by direct surgical drainage of the kidney pelvis and the instillation of an antiseptic solution through a tube introduced through a tract bored in the least vascular area of the kidney.

2. Chronic pyelonephritis can be successfully treated by the same procedure plus decapsulation after the manner of Edebohl.

3. Even when it seems that the entire urinary tract except a part of one kidney is incapacitated life can be prolonged and the patient at least temporarily restored to useful work by direct surgical drainage of the renal pelvis.

J. LOWIN KIRKPATRICK M.D.

Gutierrez R. Non Surgical Renal Tuberculosis  
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Non surgical renal tuberculosis is one of the most common and serious of kidney infections. The diagnosis is based on the presence of Koch bacilli in catheterized urine, a positive urographic examination and a decrease in renal function. In from 80 to 90 per cent of the cases the condition is at first unilateral. Early diagnosis should be followed by nephrectomy. In most cases the infection is carried by the blood stream but in some it reaches the kidney by way of the lymphatics or the bladder. Tubercle bacilli are often found in urine in the absence of subjective symptoms or apparent lesions in the urinary organs. In one case reported by the author a secondary infection resulted from obstruction at the ureteropelvic junction.

Bilateral renal tuberculosis is not frequent and is always associated with pathological lesions of one or more of the other genito urinary organs. In advanced pulmonary tuberculosis the urinary bladder is always involved.

In reporting ninety three cases of bilateral renal tuberculosis Legueu stated that after the removal of the kidney with the poorest function the bladder symptoms often subside and the lesion of the remaining kidney is arrested or cured. In early cases the involved kidney should be removed at once.

The author says that the secretion of urea in normal quantity is a safe indication of a sufficient amount of kidney tissue capable of functioning. The Mayo Clinic ascribes more importance to the phthalein test. The determination of the urea secretion and the phthalein test should be combined with pyelography and guinea pig inoculation.

There are certain cases of renal tuberculosis in which surgery should not be applied. The best results

being obtained from combined medical and urological treatment. These are cases in the advanced stage with equal involvement of both sides and a marked decrease in renal function. No kidney should be removed until the clinical data, functional tests and pyelographic studies indicate its removal positively.

Tubercle bacilluria does not always mean tuberculosis of the kidney. It may be due to a focus of tuberculosis elsewhere. Partial nephrectomy may be indicated. Certain cases of pyelonephritis with hydronephrosis and stricture or kink of the ureter should be treated cystoscopically. When a gross lesion is evident in the pyelogram and there is absence or diminution of renal function the treatment should be nephrectomy.

BENJAMIN F. ROLLER M.D.

Hyman A. Renal Neoplasms *Am J Surg* 1928 v 120

Of ninety nine cases of renal neoplasms reviewed by the author 65 per cent were cases of hypernephroma. Sixty three of the patients were between forty and fifty years of age and seventy two of them were males.

The mortality of renal tumors is between 70 and 80 per cent. The symptoms are hematuria, pain, tumor backache, loss of weight, urinary difficulty, gastro intestinal disturbances and fever. In fifteen of the cases reviewed metastases were present when the patient was first seen. The secondary manifestations of the condition are edema of the abdomen and legs, pigmentation and hypertension. The diagnosis is aided by the discovery of tumor cells in the urine and by the X ray findings. In some cases cystoscopy and functional tests may be of assistance.

Operation is contra indicated when the tumor is large and immovable and adherent to the spine and diaphragm or extends into the vena cava. Deep roentgen ray and radium treatment before and after operation seem to be of no avail. The disease usually kills in three years if operation is not performed. The usual surgical treatment is lumbar nephrectomy. To guard against metastasis the renal vein should be ligated if possible before the attempt is made to free the kidney. Half of the patients who survive the operation by three years succumb before five years.

BENJAMIN F. ROLLER M.D.

Papin M. Ligation of Both Ureters Obstruction Relieved. Cure (Ligature opératoire des deux uretères d'obstruction guérison) *Bull et mém Soc nat de chir* 1923 liv 1035

Clamping or ligating a ureter even for a short time usually leads to necrosis and stricture but the author reports a case in which both ureters were ligated for fifty one hours without serious results.

Following a total hysterectomy for cancer the patient failed to urinate. Medical treatment instituted on the supposition that the anura was reflex had no effect. After two days the author was consulted and in the course of a cystoscopy cath-

terization revealed an obstruction of each ureter a few centimeters above the meatus.

At laparotomy performed immediately under spinal analgesia the ureters were found to be included in the ligature of the uterine arteries. After removal of the ligatures indwelling sounds were placed in the ureters through small incisions made proximal to the obstruction.

Urine entered the bladder within a few hours following the operation and after an initial polyuria the output became stabilized on the fifth day at 1500 c.c. Except for a mild left pyelitis which lasted several months recovery was uneventful. Sounds passed from time to time showed no stenosis of the ureters.

Throughout both interventions the patient's condition remained good. There were no symptoms of nitrogen retention or signs of hydronephrosis. Four months later the findings of urinary analysis and the Ambard constant were normal.

ALBERT F. DE GROAT, M.D.

#### Fullerton, A. The Diagnosis of Ureteral Calculi. *Brit. M. J.* 1923 11 327

The author presents an account of his experience in the diagnosis of fifty proved cases of ureteral calculi. Eighty per cent of the calculi were made up chiefly of calcium oxalate. In the remainder except in one case phosphates predominated over uric acid. The sharp projections on most calculi cause hemorrhage from the ureter. Pain is caused by increased peristalsis due to the irritation of the calculus and increased tension in the kidney pelvis due to partial block of the ureter.

Rarely does a calculus cause complete obstruction of the ureter. Anuria of the affected side may be of reflex origin. In 70 per cent of the cases reviewed there was reflex polyuria with diminished specific gravity of the urine from the affected ureter. In these cases of unilateral diuresis the jets followed one another more rapidly on the affected side than on the opposite side. The specific gravity was measured by glass beads.

The chief signs and symptoms of ureteral calculi are discussed. According to Papin and Ambard the pain is pyelic in origin. It may be of great diagnostic aid or very confusing depending upon its location and direction of radiation. In the cases reviewed frequency of micturition was not a constant symptom. Rectal tenesmus was an occasional complaint. Inflammatory signs may be present in association with constitutional reactions such as an increase in the temperature and the pulse rate and a leucocytosis. The urine may contain blood, pus and bacteria. A physical examination without a complete urological examination may easily lead to an incorrect diagnosis because of the variety of the symptoms and findings. A tone in the lower end of a ureter may frequently be felt by rectal or vaginal examination.

Examination with the X-ray is one of the most valuable procedures for diagnosis. Various shadows

that are seen must be differentiated by stereoscopic views taken with an opaque catheter or opaque fluid. In several of the cases reviewed calcified areas in the perirenal and perireteral fat made the roentgenogram confusing.

In about 40 per cent of the cases the ureteral orifice had become sinuous, oval, circular or irregular. In the majority cystoscopic examination showed redness, small hemorrhagic splashes and edema around the ureteral orifice. In four cases the stone was seen at the orifice and delivered.

J. EDWIN KIRKPATRICK, M.D.

#### BLADDER URETHRA AND PENIS

##### Kincaid, H. L. A Bacteriological Study of the Puerperal Bladder. *Am. J. Obst. & Gynec.* 1928 vii 194

Kincaid has made a bacteriological study of the puerperal bladder in fifty-eight cases. In fifty-one cases the patient had not been catheterized previous to or at the time of labor. In the remaining seven catheterization was done at the time of delivery and the first specimen was rejected.

In the first group of fifty-one cases a positive culture was obtained at the first catheterization in four (92.16 per cent) and at subsequent catheterizations in 31 per cent of the cases. No symptoms of cystitis were noted.

The organisms recovered were relatively non-pathogenic. They included the staphylococcus albus, diphtheroids and the streptococcus lacticus. The colon bacillus was rare, being found in only 3.4 per cent of the cases. From these findings the author draws the conclusion that there is little danger of so-called catheter cystitis when the catheterization is carefully performed.

The constant presence of colon bacilli in the urine during pregnancy or the puerperium suggests the possibility of pathological changes in the urinary system, particularly pyelitis.

In the two cases of cesarean section in which urinary cultures were made the results seemed to be the same as in the cases in which delivery was effected by the normal route. This was true also of the few cases of toxemia associated with pregnancy and labor.

E. L. CORNELL, M.D.

##### Chute, A. L. Tumors of the Bladder. *Im. J. Surg.* 1923 v 217

In cases with a single small papilloma of the bladder fulguration through a cystoscope is the method of choice. In cases of multiple papillomata fulguration may be tried but in refractory cases open operation is advisable. In all cases periodic cystoscopic examination should be made for a considerable time after fulguration.

The only curative treatment for a tumor of the bladder of any size or of the infiltrative type is open surgical removal with a wide margin.

Chute ascribes local recurrences to malignant tissue left at operation. Interference with renal func-



be passed by a catheter. After the insertion of a tube into the kidney pelvis through the tract made by a forceps pushed through the kidney at Broedel's line urinary drainage occurred through and around the tube and improvement in the condition began within twelve hours. The patient had lumbar drainage of urine the remainder of his life. He lived about two years after the operation and died from intestinal obstruction due to extensive intestinal tuberculosis.

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other form of treatment in the majority of cases. As compared with expectant treatment it shortens the period of incapacity by 50 per cent. In over 80 per cent of the cases it shortens the time of involution more effectively than any other type of treatment except possibly aalan therapy. It is followed by recurrence less frequently than any other form of therapy except mercurochrome treatment.

Next to epididymotomy aalan is most effective in relieving pain and shortening the period of hospitalization and the involution time.

Mercurochrome stands next to aalan in the relief of pain but while it shortens the period of involution somewhat as compared with expectant treatment it does not materially reduce the period of confinement in the hospital. GILBERT J THOMAS M D

#### Scholl A J Primary Adenocarcinoma of the Epididymis *J Am M Ass* 1928 xci 560

Scholl states that primary solid tumors of the epididymis are rare. Among those of malignant type carcinoma is particularly infrequent.

The case reported in this article was that of a man twenty two years of age who sought treatment for pain in the right inguinal region and a swelling of the right testis. Fourteen months previously the right testis had been severely injured and three months later a dull pain began in the region of the right inguinal ring. Nine months later the right side of the scrotum began to swell. At the time of the patient's admission to the hospital the scrotum was twice its normal size and its contents were very sensitive and constantly painful. There was no evidence of previous urethral infection and no history of fever or scrotal inflammation.

At examination the right half of the scrotum was found distended and fluctuant and transmitted light. The testis was in the center of the fluid. Tapping drew off 60 c. cm. of clear straw colored fluid. The testis was then felt to be smooth rounded and slightly enlarged. The epididymis was markedly enlarged nodular and irregular. A diagnosis of acute extensive tuberculous epididymitis was made. X ray examination of the chest was negative for tumor and for tuberculosis.

Operation was done under regional anesthesia. The testis was found to be normal but the epididymis was nodular and red. As microscopic examination revealed malignancy the testis with its coverings and the cord were removed. Uneventful recovery followed.

Three months later a mass 2 cm. in diameter was found below the lower angle of the incision and at a second operation the stump of the cord was excised at the internal ring and the cord tumor mass and all surrounding tissues including the inguinal glands and subcutaneous tissue were removed. No enlarged inguinal glands were found. After the

operation X ray therapy was given over the lower portion of the abdomen and the area of recurrence.

Four months later the patient became dyspnoeic and cyanotic and 4 liters of blood stained fluid were removed from the right side of the chest. Subsequently a roentgenogram revealed a mass about 6 cm. in diameter in the region of the hilum of the lung. One week later a second tapping drew off 2 liters of fluid. Thereafter the chest was tapped about once every ten days 2 to 3 liters being removed at each tapping. The fluid contained numerous apparently malignant cells. The patient is still under observation.

Histologically the epididymal growth and the mass removed at the second operation were similar. Sections showed a moderately cellular fibrous stroma surrounding large numbers of irregular or elongated spaces completely filled with atypical epithelial cells with a distinctly adenocarcinomatous arrangement. The diagnosis was adenocarcinoma of the epididymis.

The negative X ray examination of the chest made at the time of the first operation precluded the possibility of an extensive primary focus in the lung and the time of appearance and the type of the symptoms indicate that the condition was primary in the scrotum. The tumor might possibly have arisen from a testicular rest in the epididymis but the extensive adenomatous type of the growth is very different from that characteristic of testicular tumors. LOTIS NEUWALT M D

#### MISCELLANEOUS

##### McKhanh C F Pyuria in Children The Use of the Cystogram *Am J Dis Child* 1928 xcixv 315

The purpose of this article is to stress the importance of the cystogram in the investigation of chronic pyuria in children. In the author's opinion a cystoscopic examination should be made only after all clinical laboratory and X ray studies have failed to reveal the source of the pus and the child has been under observation for about six months.

Cystography is of great aid in the demonstration of certain types of obstruction ureteral reflux and irregularity of contour of the bladder. In a normal child the cystogram shows the outline of a well filled bladder with no irregularity of contour and no passage of the opaque fluid into either of the ureters. In 20 per cent of children with pyuria of long standing it shows a reflux. When one ureter is filled the infection is said to be most marked on the side of that ureter.

Cystography can be done quickly and easily without anesthesia and without the danger of shock. The author cites several cases.

MAURICE MELTZER M D

tion is probably an important factor in the fatal outcome

Radical treatment cannot be attempted in all cases of tumor of the bladder as in many instances only palliation is possible

Cases in which the bladder has become a solid indurated mass are best left alone provided there is no considerable retention

Another type of case in which nothing is to be gained by operation is that in which the patient complains of very severe pain referred to the leg or knee. This condition is seen most often in cases with a mass in a lateral wall of the bladder which has directly invaded the tissues of the pelvis

In most cases of tumor of the bladder too far advanced for removal the operation which commonly gives relief is cystotomy and drainage

Patients treated for bladder tumor should be kept under observation for a considerable period of time particularly those with growths of the papillomatous type as these tumors show a tendency to recur and the recurrence may often be kept in check for a long time by fulguration of the superficial growths as they appear on the bladder surface

LOUIS GROSS M.D.

Markoff N. The Formation of a Urethra from the Bladder Following Its Complete Destruction in a Woman (Contribution à l'étude de la reconstitution de l'urètre chez la femme et de sa formation avec la vessie en cas de destruction complète) *Gynéc et Obst* 1928 xviii 6

The case reported was that of a Russian peasant woman who was married at sixteen years of age. The patient's first labor was difficult and lasted three days. On the fourth day a dead fetus was extracted with the forceps. Three days after delivery the patient was catheterized and on the fourth day incontinence of urine began. On her admission to the hospital two and a half months later a bladder fistula surrounded by scar tissue was found on the anterior wall of the vagina. The entire urethra and most of the anterior wall of the vagina had been destroyed. The uterus was small atrophied and displaced backward. It was reduced with difficulty. The patient had not menstruated since delivery.

Operation was performed under novocain spinal anesthesia. When the bladder had been entirely freed from the surrounding cicatricial tissue a small incision was made directly beneath the clitoris. Kocher's forceps were introduced into it and an opening was made beneath the clitoris and symphysis considerably higher than the normal opening of the urethra. A finger was then introduced into the bladder and a protrusion made on its anterior wall. Then by means of a loop of silk attached to the protrusion the wall of the bladder was pulled down into the canal that had been formed. This canal was incised at the end and sutured to the orifice made beneath the clitoris.

After the operation the external appearance of the genitalia was normal. The patient was able to

retain her urine when walking standing or lying down and for periods ranging from four to six hours. Her general health is now excellent and the newly formed urethra functions exactly like a normal urethra.

AUDREY C. MORGAN M.D.

## GENITAL ORGANS

Baker T. The Value of Vas Injection in Chronic Genital Infections Based upon a Series of Seventy Five Cases. *J. Urol* 1928 xx 23

The author has tried vas injection for sterilization or disinfection in seventy five obstinate cases of disease of the seminal vesicles. His technique is that used by Thomas Belfield and others. He divides the cases in groups according to the severity and character of the pathological changes.

He concludes that medication of the seminal vesicles by vas injection will effect a cure in about 40 per cent of cases of seminal vesicle infection. An equal number of cases however will require other treatment such as prostatic massage the use of sounds and irrigation. Vas injection should be reserved for cases which have resisted other types of treatment for several months. In Baker's opinion, the danger of sterility is less when vasectomy is done than when vasotomy is performed.

ELMIRA F. M.D.

Garvin C. H. Chronic Prostatitis. *Ohio State M. J.* 1928 xiv 618

The author states that in cases of urethritis in which the discharge persists for longer than four weeks in spite of treatment the prostate and vesicles have probably become infected. He calls attention to the fact that non specific infections of the prostate are much more common than is generally believed. He summarizes the generally accepted methods of treatment.

In conclusion he states that a standard of cure which does not include a complete urethroscopic examination of the urethra together with microscopic and cultural examinations of the expressed secretion of the prostate and vesicles is incomplete.

HENRY L. SANFORD M.D.

Stone E. A Comparison of the Results of Various Treatments for Acute Gonorrheal Epididymitis. *J. Uol* 1928 xx 24

The author states that in acute gonorrheal epididymitis expectant treatment alone is insufficient. Sodium iodide gives no better results than expectant treatment alone. Diathermy may obviate incapacity in some cases but does not have much effect on the pain and gives the poorest results as regards involution. Calcium chloride and gonolin were not studied sufficiently long to warrant an opinion regarding their influence on involution. While Stone has discontinued the use of gonolin he recommends a further trial of calcium chloride.

Epididymotomy gives immediate relief of pain in a large number of cases and earlier relief than any

touch over most of the body and varied with the duration of the disease

The cardinal symptoms are pain aching and soreness induced or aggravated by movement of the spinal vertebrae and associated most commonly with sneezing straining at stool and coughing (Dejerine's sign) and the subject's usual routine activity.

The localization of the symptoms depends upon the region of the spine that is involved. Involvement of the second and third cervical vertebrae produces headache soreness and burning at the occiput radiating to the vertex or the temples.

Involvement of the fourth to the seventh cervical vertebrae causes pain in the shoulders or aching and stiffness on the outer side of the neck and up and down the back of the neck and pain radiating down the outer side of the arms.

When the second to the fifth dorsal vertebrae are affected there is pain over the precordium radiating in an anginal manner toward the shoulders and arms and down the inner side of the arm often to the little fingers. These symptoms are frequently attributed to heart disease.

Involvement of the sixth to the ninth dorsal vertebrae causes pain burning tingling heaviness stabbing and gas in the epigastrium which suggest a digestive disorder.

The symptoms of involvement of the tenth to the twelfth dorsal vertebrae are usually attributed to appendicitis or in women to involvement of the uterine adnexa.

Involvement of the upper lumbar vertebrae causes pain and a burning sensation beginning over the upper part of the thigh or behind the iliac crest or at the sides of the thigh and radiating into the area over the inguinal ligament or downward across the front of the knee.

In cases with involvement below the third lumbar vertebra there is pain over the sacrum which radiates down the anatomical distribution of the first and second spinal roots.

RUDOLPH S REICH M D

### SURGERY OF THE BONES JOINTS MUSCLES TENDONS ETC

Wallace J O The Diagnosis and Treatment of Surgical Tuberculosis in Early Childhood  
*Atlantic M J* 1928 xxxi 977

In the diagnosis of surgical tuberculosis in early childhood a carefully taken history is of importance. Pain is a variable symptom but of decided significance. Reflex muscular spasm is usually present and involves the muscles adjacent to the affected joint.

Laboratory measures of aid in the diagnosis are (1) examination of aspirated fluid by microscope culture and animal inoculation (2) skin tests (3) biopsy test (the author condemns biopsy tests of joints which have not broken down) (4) a blood count and (5) the Wassermann test.

The roentgenogram is of great assistance. The characteristic roentgen findings are the absorption of

lime salts bone atrophy erosion distention of the joint and in old cases bone proliferation.

In the differential diagnosis transient arthritis rheumatism arthritis deformans juvenilis acute epiphysitis and syphilis must be ruled out.

Essentials in the treatment are proper fixation good food open air and correct posture. For the treatment of spinal tuberculosis Wallace has devised a frame with a hinge arrangement which produces hyperextension at the site of the disease. He emphasizes the value of heliotherapy and states that in bone or joint tuberculosis in children surgical interference is rarely advisable.

RUDOLPH S REICH M D

Brown C J O The Diagnosis and End Results of Tuberculosis of the Hip Joint  
*Med J* 1918 11 196

Of the seventy one cases of tuberculosis of the hip reviewed by the author twelve were doubtful cases in which the condition was monarticular and chronic. In eight of the latter the hip is now functionally normal and in three there is only slight limitation of movement. A good functional result was obtained also in sixteen cases of undoubted tuberculosis in fourteen of which the joint is ankylosed. In nine cases the result is unsatisfactory because of healing with gross bony destruction of bone subluxation and deformity. Thirteen patients died of meningitis and generalized tuberculosis and twenty one are still under treatment. Of the latter thirteen have been treated for four years and show destruction of the head of femur and acetabulum seven show improvement in the condition of the hip and six have amyloid disease.

In hip disease without X ray evidence of bone destruction the condition may or may not be tuberculous and complete recovery is likely to occur. In cases with destruction of the articular surfaces ankylosis with from 30 to 35 degrees of flexion gives the best result.

ELLEN J BERKHEISER M D

Taylor J The Treatment of Tuberculous Disease of the Hip  
*Glasgow M J* 1928 cx 129

The author reviews a group of cases of tuberculous disease of the hip observed over a period of eight years in which the treatment was similar to that carried out at Berck sur Mer. The measures employed included carefully graduated irradiation by both natural and artificial sunlight and partial immobilization of the hip joint. In cases admitted with deformity a special extension apparatus was applied for gradual correction. In cases with dislocation or fixation of the head forcible manipulation was resorted to and fixation applied. Although this method is held in disfavor by most authorities Taylor considers it safe. When complete osseous ankylosis had resulted correction was obtained by osteotomy.

The results tabulated by the author show an increased number of movable joints and a decreased amount of shortening.

RUDOLPH S REICH M D

# SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

## CONDITIONS OF THE BONES JOINTS, MUSCLES TENDONS ETC

Cooperman M B Gonorrheal Arthritis *Am J Surg* 1928 v 241

Cooperman reviews 44 cases of gonorrheal arthritis in young children and 26 cases in adults

The infants were five or six weeks of age and their joint complications were of three or four weeks duration In this group of patients 136 joints were infected and practically all were suppurating No deaths occurred and complete recovery of joint function was obtained in 75 per cent of the cases Vaccines were tried at first but were discontinued because no benefit was noted following their use The joints were treated by the application of casts repeated aspirations arthrotomy and physiotherapy Six of the infants were discharged after three months and 15 after five months with normal function Twelve were treated for eighteen months and 11 are still under treatment after three years

In the 26 adults the monoarticular infections were the most resistant In cases treated surgically during the acute stage there was only slight impairment of function In the acute stage the best methods of treatment are aspirations and arthrotomies to relieve the intra articular tension combined with temporary fixation in casts

During the subsiding stage of the disease, physiotherapy is indicated Joints showing advanced pathological changes are best treated with appliances to prevent the development of deformities

ELVEN J BERKHEISER MD

Meyer A W Spontaneous Dislocation and Destruction of the Tendon of the Long Head of the Biceps Brachii Fifty Nine Instances *Arch Surg* 1928 x 11 493

The author states that when the tendon of the long head of the biceps brachii is dislocated it probably undergoes considerable wear but even when it remains in its normal position and in an otherwise normal shoulder joint it may be subjected to wear He believes that prominence of the supraglenoid tubercle is not a reliable indication of congenital absence of the tendon as the tendon frequently merges so completely with the ligamentous glenoidal lip as to be indistinguishable and inseparable from it

Partial or complete destruction of the articular portion of the tendon is relatively uncommon but the author has collected thirty nine cases of dislocation and twenty of complete absence of the articular portion In all of the cases of absence of the articular portion the tendon had obtained a secondary attachment to the floor or sides of the sulcus or to the humeral diaphysis distal to the lesser tuberosity

Meyer is of the opinion that some cases in which the divided tendon obtained a secondary attachment to the diaphysis distal to the lesser tuberosity it may have been dislocated and have played on the tuberosity before it was divided He believes this may be true also of cases in which the tendon is attached to the floor of the sulcus in the region of the lesser tuberosity as it is not necessary for the tendon to be exposed to considerable wear from contact with the relatively rough face of the lesser tuberosity to be weakened by wear

The greater frequency of absence of the intra articular portion of the tendon on the right side may be due to right handedness and the somewhat greater frequency of dislocation on the left side may be due to the fact that greater tension is put on the tendon and the capsular attachment on the left side in occupations requiring shovelling and pitching with a fork in which the left hand acts as a fulcrum and the left humerus passes into marked lateral rotation and abduction at every movement

A study of the anatomy of the humero capsular articulation shows that normal conditions of the humeroscapular articulation favor dislocation of the long head because until the arm is somewhat abducted the tendon curves forward encircling the slippery and sloping rounded surface of the upper anterior portion of the head of the humerus The nature of the anterior wall of the sulcus—especially the presence or absence of the bony ridge termed by the author the supratubercular ridge—is an important factor in dislocation When the arm is slightly rotated laterally the undersurface of the tendon lies fully on the floor of the sulcus but as lateral rotation is increased its anterior margin is forced against the anterior wall of the sulcus especially the part formed by the lesser tuberosity and the capsular attachment proximal to it

ANTHONY F SAVA, MD

Gunther L The Radicular Syndrome in Hypertrophic Osteo-Arthritis of the Spine *California & West Med* 1928 LXII 152

The radicular syndrome is very frequent in osteoarthritis of the spine It is described by Dejeune as an acute inflammation of the spinal roots with alterations in sensation or muscle function which show by their distribution that the primary disease process is in the spinal root In the cases reviewed by the author tests with a cotton tuft pin point heat, cold or pinching demonstrated that the sensory changes were usually bilateral The most common findings were hyperaesthesia hypaesthesia or anaesthesia to the cotton tuft and changes in thermal sensation The disturbances ranged from a small area of hyperaesthesia to a dulled sensorium to light

# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

## BLOOD VESSELS

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Roentgen ray examination soon after operation shows that the development of the vascular bed is most marked when the vein is simultaneously occluded This immediate benefit may be the deciding factor in maintaining the vitality of the limb

In cases of gradual occlusion of the arterial tree it was found that the collateral vessels had had an opportunity to develop and that the final vascular bed was greater when the vein was patent

WILLIAM T SHACKLETON MD

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In recent years it has been well established by both clinical and experimental evidence that ligation of a large artery should be accompanied by ligation of its companion vein This procedure decreases the incidence of gangrene and is followed by improved functional ability and an increase in the residual arterial pressure the venous pressure the minute volume flow from the end of the divided artery and the peripheral arterial circulatory bed

It was reasoned by the authors that if gangrene from arterial ligation can be prevented by occlusion of the vein impending gangrene from arterial disease might be prevented in the same way

Ligation of the popliteal vein was therefore done in cases of arteriosclerosis and thrombo angitis The surface or skin temperature was determined by means of an aneroid thermometer and the deep temperature by means of a thermocouple galvanometer The determinations were made at the time of operation every few minutes for an hour or more after the operation and thereafter at intervals up to as long as four weeks after the operation

In five of seven cases a definite increase (from a fraction of 1 degree to 3 degrees) in temperature was noted after the ligation The increase was especially marked when the artery was not entirely occluded and was felt to be pulsating The cause and significance of this phenomenon is not clear The effect of the operation on the pain oedema and color the growth of the nails and fatigue was favorable The temperature changes in the limb were associated with other signs of functional ability of the circulation

The authors suggest that the temperature increase after the ligation may be due to a disturbance of the vasomotor mechanism of the blood vessels or to the shunting of the blood through superficial vessels

MORRIS A SLOCUM MD

**De Massary E and Flandrin P** Rupture of an Aneurism of the Abdominal Aorta into the Duodenum (Anévrisme de l'aorte abdominale fissuré dans le duodenum) *Bull et mém Soc méd d hôp de Par* 1928 cliv 1272

The authors report a case of aneurism of the abdominal aorta which evolved without symptoms until it ruptured into the intestine

The patient a man of fifty three years who had been a bicycle racer entered the hospital because of a sudden hæmorrhage from the mouth and anus

He had had no gastric disturbances but had suffered from attacks of sciatica for several months and three years previously had been under treatment for gummata of the testicle The syphilis which was contracted twenty years before had been in differently treated

Examination revealed a large pulsating tumor of the abdomen over which a thrill and systolic bruit were noted The systolic blood pressures of the legs taken at the ankle showed a difference of 40 mm

For five days there were no further hæmorrhages and the patient's condition improved Then a small amount of blood was passed by bowel and on the sixth day the hæmatemesis recurred

During the evening of the seventh day the patient suffered violent pain in the abdomen and presented all the signs of acute anæmia He died the following morning

At autopsy the small bowel was found filled with blood Behind the peritoneum and over the lower lumbar vertebra there was a rounded tumor a dilatation of the terminal portion of the aorta which had eroded deeply the bodies of the vertebra Higher up the walls of the aorta became indistinguishable and the region just above the renal arteries was occupied by an enormous clot In this portion of the aneurism the communication with the duodenum was found

ALBERT F DE GROAT MD

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This report is based on experiments performed on rabbits The ventral surface of the animals was exposed to rays of rather low wave length—0.375 Å The factors were 90 kV 2.9 ma a distance of 24.5 cm and practically no filter With these fac

## FRACTURES AND DISLOCATIONS

Taylor R T Fracture Dislocation of the Shoulder The Relation of Soft Parts to Restoration A New Method of Treatment *Arch Surg* 1928 xvii 475

The author reports a case of fracture dislocation of the proximal end of the humerus in which the fracture extended through the surgical neck, and the muscle spasm of the supraspinatus and infraspinatus rotated the proximal fragment or humeral head through an arc of 180 degrees so that its fractured surface was directed upward.

After unsuccessful attempts at reduction under anesthesia the patient was put up in a Balkan frame flat on his back. The spring and mattress were made additionally firm by cross slats. Projecting from under the mattress beyond the left side of the bed for about 2 or 3 ft. was a board 5 ft. long and 4 in. wide. To the upper surface of this board at its outer end a similar piece of board 4 by 4 in. was nailed at right angles and at its center was surmounted by a vertical pulley. By means of this rough board which was held by the mattress and the patient's weight in any position in which it was placed by the surgeon horizontal traction over the pulley was made at any desired angle of abduction by means of adhesive straps and a spreader attached to the upper arm. The forearm with adhesive straps applied from elbow to hand and the upper arm supported with a sling with a spreader were suspended from the overhead bars of the Balkan frame with appropriate pulleys and counterbalance weights. About 3 lb. each were used as counterpoises for suspension of the forearm and arm and in abduction at the side of the bed from 10 to 15 lb. were used as the case progressed.

After reduction by means of this apparatus a cast was applied from the hand to below the crests of the ilia.

About ten weeks after injury the patient was able to return to his work. ANTHONY F SAVA MD

Holderman H H Fracture and Dislocation of the Sternum *Ann Surg* 19 8 LXXV 452

The author states that fractures and dislocations of the sternum are rare. They occur most frequently in mining communities. The most common causes are direct blows on the chest, compression and crushing of the chest, hyperflexion of the spine associated with fractures of the vertebral column, falls, and the falling of a heavy weight on the chest. In some cases, however, the condition is the result of indirect violence and muscular action.

The most common type of sternal fracture is a transverse break at the juncture of the manubrium and gladiolus. In the great majority of cases the displacement is such that the lower fragment lies partially in front of the upper one, sometimes overriding it. The fracture is usually simple.

The prognosis is good in uncomplicated cases but decidedly poor in those with complications. In the

uncomplicated cases repair with the formation of a bony callus usually takes place in from four to eight weeks.

Operative treatment is frequently justifiable but in most instances the reduction can be accomplished by manipulation and maintained by an adhesive plaster swathe. Hyperextension of the spine with the shoulders held back may be necessary. Scudler states that the patient should remain in bed for three weeks and should wear a Taylor back brace for two months.

Holderman reports three cases.

ROBERT C LOVERMAN MD

Dickson F D Fractures of the Ankle *J Am M Ass* 1928 xci 845

Direct violence plays a very unimportant role in fractures of the ankle. The types of indirect violence causing such fractures are (1) external rotation causing torsion fracture of the fibula and occasionally rupture of the internal lateral ligament (2) abduction causing rotation of the astragalus resulting in rupture of the internal lateral ligament and fracture of the fibula (3) adduction which tears off the external malleolus and causes fracture of the fibula and occasionally a fracture of the internal malleolus by rotation of the astragalus and (4) an upward compressive thrust on the tibial malleoli causing separation of a triangular fragment from the posterior surface of the tibia, lateral and backward displacement of the astragalus and fracture of the fibula.

Fractures of the ankle may be classified as follows:

A Fracture of the malleoli

- 1 Isolated (a) fibula (b) internal malleolus
- 2 Combined (a) low bimalleolar without displacement of astragalus

B Fractures of the weight bearing surfaces of the tibia

- 1 Isolated (a) posterior marginal fractures, (b) anterior marginal fractures
- 2 Combined anterior or posterior marginal fractures associated with fractures of the malleoli

The diagnosis of fracture of the ankle is based on a history of injury, a localized point of tenderness over the regions affected, effusion and outward displacement of the foot, the degree depending upon the amount of displacement of the astragalus increased lateral mobility and positive roentgenographic findings.

Reduction should be effected as soon as possible under complete anesthesia and the foot immobilized in a plaster cast in marked inversion. Raily fixation in the normal position is demanded. Following the reduction other roentgenograms should be made.

The author uses a bivalved cast. At the end of the second week the anterior half of the cast is removed and light massage and toe movements are begun.

RODOLPH S REICH MD

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When large doses were given the effect uniformly seen was a persistent lymphocytopenia. This effect was immediate. In one case the leucocytes were reduced to 600 cells during the administration of the dose (seven hours). This marked fall was soon followed by an increase in the neutrophils. The increase persisted but before the death of the animal the neutrophils were exceeded by the monocytes. No changes were noted in the number of red cells.

Smaller doses (500 R) were tried in two ways—in divided doses administered over a period of twenty three days and in a single dose. Both methods caused a preliminary drop in the number of lymphocytes and a secondary increase in the number of neutrophils. Divided doses caused a more intense and prolonged disturbance but no monocytosis. The single dose caused a moderate monocytosis lasting several days.

CHARLES H. HEACOCK, M.D.

**Pacha K. R.** Evidence That There Is a Hæmatopoietic Hormone in the Blood of Anæmic Children. (La vérification de l'hormone hématopoïétique dans le sang des enfants anémiques accidentellement) *Revue méd.* 1938 xxvi: 950.

It has been shown experimentally that a hæmatopoietic hormone develops in the blood of laboratory

animals after anæmia has been brought about artificially. The author reports several clinical cases which demonstrate that there is such a hormone in the blood of children who are recovering from anæmia. One case was that of a ten year old girl with anæmia from ankylostomiasis and another that of a ten year old boy with anæmia evidently due to tuberculosis of the glands of the neck. In the former the erythrocyte count was 1,500,000 and in the latter it was 1,200,000.

Both patients were given hygienic and dietetic treatment and extract of sheep's spleen. In addition the girl was given treatment for the ankylostomiasis. Before the disappearance of the ova from the stools the girl's erythrocytes increased to 4,200,000 and after the disappearance of the ova they increased to more than 6,000,000. This showed that the blood was rich in hæmatopoietic hormone. In the case of the boy the erythrocytes had increased to only 2,800,000 after fifty days of treatment, a fact attributed by the author to inhibition of hæmatopoiesis by bacterial toxins. The boy was therefore given injections of from 0.5 to 1 c.c. of the serum of the girl's blood which was evidently rich in hæmatopoietic hormone. After three injections the number of erythrocytes had increased to 3,800,000 at the end of a month it was 4,600,000 and at the end of two months it was 6,500,000.

AUDREY G. MORGAN, M.D.

## SURGICAL TECHNIQUE

### ANTISEPTIC SURGERY TREATMENT OF WOUNDS AND INFECTIONS

Doughty J F Rattlesnake Bite *California & West Med* 19 8 xiv 237

Rattlesnakes are found in many parts of the United States and the hazard of rattlesnake bite is increasing because of the increase in outdoor recreations. The author reports two fatal cases of rattlesnake bite and reviews nineteen cases collected from the literature. The physiological actions of the venom are classified and the mechanism of the bite is briefly described.

Prevention of rattlesnake bite is possible to a great extent by the wearing of leather puttees. The non specific methods of treatment discussed are methods which attempt to withdraw the poison from the part ligation and efforts to destroy the poison *in situ* by chemicals.

Specific treatment by snake antivenom depends for its effectiveness upon the specificity of the antivenom for the species its early administration and adequate dosage.

The author's conclusions are as follows:

- 1 Local treatment is inefficient but ligation is a valuable first aid measure.
- 2 Up to the present time the mortality has depended largely upon the amount of venom injected.
- 3 There is a specific antivenom.

In the discussion the mortality in sixty seven cases reported in Texas in which antivenom was not used is given as 34.3 per cent. In eighty three cases treated with antivenom it was 6 per cent.

Rice T B and Harvey V K The Therapeutic Use of Bacteriophage in Suppurative Conditions *J Lab & Clin Med* 1928 xiv 1

Rice and Harvey used bacteriophage filtrates in the treatment of fifty cases of infection due to staphylococcus aureus staphylococcus albus bacillus coli and bacillus pyocyaneus. Most of the strains of bacteriophage were isolated from mixed sewage and then trained to activity by being grown with the particular organism against which lytic activity was desired so that there was active though not necessarily complete lysis of the autogenous culture *in vitro*. The best results were observed when the best lysis was obtained.

As a rule the bacteriophage filtrate was applied directly to the lesion as a wet dressing or as an instillation into a sinus an abscess cavity or the urinary bladder. In two cases the material was injected into an unopened abscess.

The authors attribute their good results to (1) direct destruction of the offending organism by the bacteriophage (2) an antiviral action (3) a bacteria

antigen content or (4) a combination of these properties. The conditions treated were boils carbuncles abscesses ulcers bed sores and urinary infections.

RICHARD F HERNDON M D

Handley W S The Treatment of Gangrene *Brit M J* 1928 ii 593

The vasomotor surgery of gangrene is reviewed from the historical standpoint. Leriche is cited as having reported successful results from sympathectomy in causalgia after war wounds, certain painful crises preceding gangrene caused by obliterative endarteritis Raynaud's disease, certain cases of painful stump muscular spasm secondary to war wounds trophodema and trophic ulcers.

The vasodilating effect of periaxillary sympathectomy is transitory disappearing in from three to four weeks. Leriche does not recommend his operation for senile gangrene that has already developed.

The author prefers alcohol injection to Leriche's operation. He claims that by means of it he has been able in certain cases to avert threatened gangrene or to arrest the spread of senile gangrene.

The effect of alcohol injection is immediate vasodilation which lasts for a year or more. The main criticism of the alcohol injection is that it is impossible to predict in which cases the method will be beneficial. Anatomical variations also present difficulties.

Vasomotor surgery can be applied before gangrene has set in.

J FRANK DOLCERY M D

### ANÆSTHESIA

Donovan R Beretervide J J and Rechniewski C Meningomyelitis in a Heredosyphilitic Patient Following Spinal Anæsthesia (Meningomyelitis en un heredo específico consecutiva a una raquí anestesia). *Rev Soc de med interna y Soc de fisiol* 1928 iv 67

Unfavorable after effects of spinal anæsthesia consist usually of headache vomiting backache and rigidity of the neck. Aseptic meningitis with hemorrhage and purulent meningitis are very rare. A pre-existing or latent meningeal affection such as tuberculous meningitis may be lighted up as a result of spinal anæsthesia.

In the authors' case of syphilitic meningomyelitis developing after spinal anæsthesia there had been no symptoms of lues whatever before the intraspinal injection. After the injection paraplegia developed below the point of injection with clinical symptoms of meningomyelitis and all the biological reactions of syphilitic meningitis. Considerable improvement followed the administration of antiluetic treatment although the serological reactions remained positive.

WILLIAM R. MECKER M D

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AUDREY G. MORGAN M.D.

studies suggest that age is a factor of primary importance

To determine the part played by age in the mortality rate from cancer Eggers compared the trend of the cancer mortality rate with the trend of the mortality from conditions designated as degenerative diseases which ordinarily take their toll from the same age group as cancer

When the mortality curves were plotted for age periods the curves for cancer mortality and degenerative diseases entirely paralleled each other in a straight rising curve up to 1918 the year of the influenza epidemic Then after a slight drop the cancer death rate resumed its normal course whereas the death rate from degenerative diseases dropped much further in 1918 and in 1923 was still fluctuating and had not yet reached its normal course

The drop in the mortality from cerebral hemorrhage and apoplexy was of short duration The drop in the death rate from organic heart disease was somewhat longer In cases of chronic nephritis the mortality still showed a reduction in 1924 The findings therefore indicate that the death rate from cancer and the combined death rate from the other usual diseases of advanced age with the exception of chronic nephritis show an almost strictly proportionate rate of increase for the twenty five year period studied

The author believes that if some of the increase in the cancer mortality were due to increased accuracy in diagnosis there would have been an increase in the mortality of cancer over that of other diseases of similar age distribution since cancer would probably be more frequently missed than erroneously diagnosed as being present There was no indication of such an increase during the twenty five years of this report

HARRY C. SALTSTEIN M.D.

## GENERAL BACTERIAL PROTOZOAN, AND PARASITIC INFECTIONS

Stewart F. W. and Haselbauer P. Virus Neutralization Experiments with Rosenow's and Pettit's Antipoliomyelitic Sera *J. Exper. Med.* 1928 xivm 449

During the past decade three types of antipoliomyelitis sera have been employed in the treatment of acute anterior poliomyelitis These are (1) the sera of convalescent human poliomyelitis (2) sera from horses immunized against the streptococci supposed by Rosenow and others to be related to those causing poliomyelitis and (3) the Pettit serum prepared at the Pasteur Institute The last mentioned product is a serum from sheep or horses supposedly immunized against poliomyelitis virus by repeated intravenous injections of emulsions of spinal cords of monkeys suffering from poliomyelitis

From their experiments the authors reached the following conclusions

1 The Rosenow antistreptococcus poliomyelitis serum concentrated or unconcentrated does not neutralize the virus of poliomyelitis in monkeys

2 The Pettit antipoliomyelitis horse serum neutralizes the virus only occasionally

3 Immune sheep sera prepared according to the method of Pettit have not neutralized virus even when the normal sera of the same animal have effected neutralization

4 Such neutralizations are difficult to explain and should not be confused with the constant virus neutralizing action of both human and monkey convalescent sera

5 Experimental evidence affords no basis for the use of either the Rosenow or the Pettit serum in the therapy of poliomyelitis SAMUEL KAHN M.D.

## MISCELLANEOUS

### CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Slye M The Relation of Heredity to Cancer  
*J Cancer Research* 1928 xii 83

Slye states that Little's hypothesis that the genetic factor in cancer is a heterozygous dominant is pure assumption and has been shown to be impossible. The genetic factor has been demonstrated to be a mendelian recessive. To support this theory, numerous charts showing a hereditary study of mated cancerous and non-cancerous mice strains are presented and analyzed. NATHAN N. CROWN M.D.

Sugiyama K Studies upon a New Transplantable Rat Tumor  
*J Cancer Research* 1928 xii 143

The author's findings with regard to a new transplantable rat sarcoma are summarized as follows:

1. A relationship existed between tumor growth and the age of the host. The ages of the animals greatly influenced the results of transplantation.

a. Suckling and very young rats proved to be the most favorable hosts for the continued growth of the sarcoma. In the suckling rats, the incidence of tumor regression in the positive transplants was 9.3 per cent, whereas in the middle aged and old rats it was 87.5 per cent. However, the percentage of takes and their rate of growth were the same whether the hosts were very young or old.

3. The essential difference between the histological structure of the transplanted tumors (after successive generations) and the original tumor was an increase in the size and number of the sarcoma cells.

4. Rats immune to one type of tumor may or may not be immune to another kind.

5. The transplantability of the rat sarcoma is completely destroyed by immersion in a Locke Ringer solution or a buffer mixture solution with a hydrogen ion concentration of 1, 3, or 4 for twenty-four hours at a temperature of 3 degrees C.

6. The growth capacity of the sarcoma was destroyed when the tumor was heated for thirty minutes at a temperature of 45 degrees C, but the tumor cells were still viable after an exposure of twenty minutes to a temperature of 45 degrees C.

7. The viability of the fresh sarcoma was completely destroyed by dehydration.

8. The tumor producing substance of the rat sarcoma is not filterable. JOSEPH K. NARAY M.D.

Reinhard Buchwald and Tucker Some Further Experiences with the Production of Colloidal Lead or Salts of Lead  
*J Cancer Research* 1928 xii 160

The Bredig method of arcing between lead electrodes in an aqueous solution of gelatine and cal-

cium chloride yields a colloidal solution of metallic lead.

By substituting various other chlorides such as those of iron, sodium, and potassium, the authors were able to produce more concentrated solutions. The best solution with respect to concentration and stability was obtained by the use of potassium chloride. This solution was employed for most of the work.

The methods of preparing colloidal solutions of lead and salts of lead are described. Determinations were made of the influence of acidity and the amount of protectant on the resulting concentration of lead.

JOSEPH K. NARAY M.D.

Guyer M. F. and Daniels F. Cancer Irradiation with Cathode Rays  
*J Cancer Research* 1928 xii 166

The cathode rays correspond to beta rays from radium but are available in much larger quantities. In general, they are slower in velocity than the beta rays and freer from the penetrating X rays or gamma rays.

From experiments it is evident that in certain tumors which are not too far advanced the cathode rays have a specific detrimental effect on the neoplastic tissue. The beneficial effects of the rays are generally limited to the earlier treatments. Successive rayings after the initial improvement seem to be more injurious than beneficial. A single long exposure appears to yield the best results. The penetration of the effective rays into living cancers as shown by transplantation of tumor fragments taken at different depths was at the most 0.5 cm.

The cathode rays injure skin tissue when they are applied directly to it but apparently do not produce malignant growth.

The treatment of one tumor does not affect another tumor in the same animal, the action of the cathode rays being direct rather than systemic.

JOSEPH K. NARAY M.D.

Eggers H. E. The Increased Mortality Rate of Cancer  
*J Cancer Research* 1928 xii 9

The reported mortality rate of malignant disease increased from 63.0 per 100,000 in 1900 to 91.0 per 100,000 in 1924. The usual interpretation of this increase is that many more people have survived to an age at which they become susceptible to cancer, but two other factors are generally added, both of which are impossible to evaluate exactly, namely, increased diagnostic accuracy on the part of the medical profession and the more regular procurement of medical attention for the aged. Willcox thought that the increased rate was due almost wholly to increased diagnostic accuracy, but later statistical

studies suggest that age is a factor of primary importance

To determine the part played by age in the mortality rate from cancer Eggers compared the trend of the cancer mortality rate with the trend of the mortality from conditions designated as degenerative diseases which ordinarily take their toll from the same age group as cancer

When the mortality curves were plotted for age periods the curves for cancer mortality and degenerative diseases entirely paralleled each other in a straight rising curve up to 1918 the year of the influenza epidemic Then after a slight drop the cancer death rate resumed its normal course whereas the death rate from degenerative diseases dropped much further in 1918 and in 1923 was still fluctuating and had not yet reached its normal course

The drop in the mortality from cerebral hemorrhage and apoplexy was of short duration The drop in the death rate from organic heart disease was somewhat longer In cases of chronic nephritis the mortality still showed a reduction in 1924 The findings therefore indicate that the death rate from cancer and the combined death rate from the other usual diseases of advanced age with the exception of chronic nephritis show an almost strictly proportionate rate of increase for the twenty five year period studied

The author believes that if some of the increase in the cancer mortality were due to increased accuracy in diagnosis there would have been an increase in the mortality of cancer over that of other diseases of similar age distribution since cancer would probably be more frequently missed than erroneously diagnosed as being present There was no indication of such an increase during the twenty five years of this report

HARRY C. SALTSTEIN M D

## GENERAL BACTERIAL PROTOZOAN, AND PARASITIC INFECTIONS

Stewart F W and Haselbauer P Virus Neutralization Experiments with Rosenow's and Pettit's Antipoliomyelitic Sera *J Exper Med* 1928 xlviii 449

During the past decade three types of antipoliomyelitis sera have been employed in the treatment of acute anterior poliomyelitis These are (1) the sera of convalescent human poliomyelitis (2) sera from horses immunized against the streptococci supposed by Rosenow and others to be related to those causing poliomyelitis and (3) the Pettit serum prepared at the Pasteur Institute The last mentioned product is a serum from sheep or horses supposedly immunized against poliomyelitis virus by repeated intravenous injections of emulsions of spinal cords of monkeys suffering from poliomyelitis

From their experiments the authors reached the following conclusions

1 The Rosenow antistreptococcus poliomyelitis serum concentrated or unconcentrated does not neutralize the virus of poliomyelitis in monkeys

2 The Pettit antipoliomyelitis horse serum neutralizes the virus only occasionally

3 Immune sheep sera prepared according to the method of Pettit have not neutralized virus even when the normal sera of the same animal have effected neutralization

4 Such neutralizations are difficult to explain and should not be confused with the constant virus neutralizing action of both human and monkey convalescent sera

5 Experimental evidence affords no basis for the use of either the Rosenow or the Pettit serum in the therapy of poliomyelitis SAMUEL KARN M D

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MARCH 1929

# International Abstract of Surgery

*Supplementary to*  
**Surgery, Gynecology and Obstetrics**

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Editorial Communications Should Be Sent to Franklin H Martin Editor 54 East Erie St Chicago  
Editorial and Business Offices 54 East Erie St Chicago Ill 60611 U S A  
Publishers for Great Britain Baillière Tindall & Cox 8 Henrietta St Covent Garden London W C.

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## EDITOR'S COMMENT

**A**N unusually large number of abstracts of particular interest to the orthopedic surgeon will be found in this month's issue of the *INTERNATIONAL ABSTRACT OF SURGERY*. Osgood (p. 271) again calls attention to the frequent occurrence of compression fractures of the spine and to the fact that they may easily escape recognition unless a careful roentgenological examination is made which includes both anteroposterior and lateral exposures. He points out the fact that in from 70 to 80 per cent of cases the fracture involves one of four adjacent vertebrae—the two lower dorsal and two upper lumbar—and repeats what Huemmel has emphasized so often that the first symptoms of the injury may appear after a period of comparative well being during which the possibility of spine injury may remain unsuspected.

Campbell's review of the end results of arthroplasty of the knee with particular reference to twenty-two cases in which from four to nine years have elapsed since operation (p. 260) shows what splendid results may be obtained by good surgery even in unusually difficult cases. One statement is of particular interest—that operation following acute pyogenic infection of a single knee was successful in from 80 to 91 per cent of cases, but that the same operation following virulent osteomyelitis extending through the joint was always unsuccessful.

Jones' recommendations as to the treatment of Volkmann's ischaemic contracture (p. 264) carry as do all his statements the weight of authority. He has consistently used mechanical extension of the joints with the aid of splints and states that he has never had occasion to regret it. He has had little experience with operative measures but believes that Page and Platt's operation—detachment of the flexor muscles from their origin—is a logical procedure. In this connection Bailey's report of such an operation (p. 267) slightly modified and followed by an almost perfect result is of particular interest.

The frequency with which stones may be present in the common duct with only mild symptoms of biliary colic or even without symptoms the fact that infection in the common and hepatic ducts may give rise to typical symptoms of stone

in the ducts and by inflammatory obstruction cause considerable dilatation of the common duct and the frequency with which pancreatitis is associated with gall bladder disease are some of the points emphasized by Lahey, Judd and Jones in a symposium on the surgery of the bile passages recently presented before the Massachusetts Medical Society (p. 235). Of 837 operations performed in Lahey's clinic for disease of the biliary tract 158 (nearly 20 per cent) were performed on the bile ducts.

In connection with this symposium Tamman's experimental studies on dogs with biliary fistula (p. 236) is of particular interest. He found that feeding with ox gall brought about regression of the anaemia which developed so frequently after obstruction of the common bile duct and that if this feeding was begun immediately after the formation of the fistula the anaemia did not appear. He found further that the subcutaneous administration of Vitamin D had a very favorable effect upon the osteomalacia which develops after a few weeks in dogs with biliary fistula.

The frequency with which gastrojejunal ulcers was found in a series of autopsies on patients on whom a gastrojejunostomy had been performed indicates as Hurst and Stewart have pointed out (p. 216) that this complication probably occurs much more frequently than is generally believed. Particularly significant is the fact that of forty-two cases in the series reported in which at least nine months intervened between the operation and the patient's death jejunal or gastrojejunal ulcers were found in 52 per cent.

Gibson's review of 123 cases of acute perforation of the stomach and duodenum (p. 219), Bancroft's study of the advances of the past ten years in the treatment of acute appendicitis (p. 210), Poate and Inglis' report of a case of gangliomatosis of the intestinal tract (p. 223) and the Finneys' report of a successful case of partial resection of the pancreas (p. 237) are some other reviews of particular interest in the field of abdominal surgery. The importance of the last mentioned though the original article is very briefly epitomized is self evident to the surgeon familiar with the present day status of the surgery of the pancreas.

# INTERNATIONAL ABSTRACT OF SURGERY

MARCH, 1929

## LANDMARKS IN SURGICAL PROGRESS

By IRVING S. CUTTER, M.D., Sc.D., Chicago  
Dean Northwestern University Medical School

### RESECTION OF THE SUPERIOR MAXILLA—HORATIO GATES JAMISON

MOST writers credit Joseph Gensoul (1797-1858) of Lyons with the first resection in 1826 of the major portion of the superior maxilla. Opening the antrum was an operation of fair frequency in the eighteenth century and this sometimes included removal of portions of the bone. Even as early as 1693 Acoluthus of Breslau practiced a partial resection of the jaw.

In *A Century of American Medicine* Samuel D. Gross says

America may justly claim the honour of having led the way in extirpations of the upper jaw. Small portions it is true had been chipped off in the eighteenth and even in the eventeenth century but the first grand and difficult operation of the kind of which we have any knowledge was performed in 1820 by Dr Horatio G. Jamison of Baltimore who took away nearly the entire bone on one side the roof of the antrum alone being left as it was not involved in disease. Resection of both bones a still greater triumph of surgery was first performed in 1824 by David L. Rogers of New York who carried his incisions as far back as the anterior limits of the pterygoid process of the sphenoid bone his patient like that of Jamison also making a good recovery.



HORATIO GATES JAMISON  
(1788-1853)

Jamison's case was a tumor of the left superior maxilla in a male aged twenty six. The patient had first applied to Dr Jamison in December 1819 but did not return for operation until the eleventh of November 1820 the tumor having grown rapidly during the interval. The case report was published in the *American Medical Recorder* of 1821. The article is illustrated with a view of the patient prior to operation showing the deformity occasioned by the tumor. Jamison's second examination of the patient disclosed that

The base of the tumour extends from the middle of the palatine arch to the pterygoid process and over all the space which had been occupied by the gums. The teeth

are long since forced out of their sockets and are seen sticking in different and distant parts of the tumour. The base is so very short that no very distinct view of it can now be had. But from a clear recollection of its situation last year together with a careful examination I was of opinion and was joined in opinion by my friends Doctors Chapman and Harper that the lines just mentioned included the extent of its attachments.

In spite of the manifest difficulties and the lack of antecedent knowledge of the procedure Dr Jamison performed the operation at one sitting

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The operation is described in Jameson's original report as consisting of four stages

First—Ligation of the left carotid in which a buckskin ligature was used

Second—Exposure of the tumor

I would have cut directly in the direction of the greater zygomatic muscle as a matter of choice but in consequence of the mouth's being greatly distorted the incision began a little nearer the nose and terminated about the origin of that muscle. This incision was made by a single stroke of the knife and was conveniently performed without touching the tumour by my holding up the lip on one side of the knife while an assistant held up the other. The labial and facial arteries bled freely, as though no obstruction had been put upon the vessel below. I proceeded to take up the superior portion of the facial artery but it was soon perceived that the hæmorrhage would be of short duration. The membrane of the mouth which connects the superior lip to the gums was next divided by one stroke of the knife on to the nose—a second stroke cut down that portion of the buccinator muscle which is attached to the upper jaw. We had now some confirmation of the opinion which we had had of the extent of the attachments of the tumour but there was nothing like a pedicle or cervix all was firm and unyielding. Having now brought the tumour as much as possible into view without having done any injury to the parotid duct I proceeded to remove the tumour

### Third—Deep dissection

The tumour being now pretty well emptied of its blood by pressing it with a considerable degree of violence it was more distinctly seen that the base of the tumour extended along the palatine arch nearly to the velum pendulum palati the tumour however had forced this structure deep into the throat. The incision was deepened by two or three bold strokes and all thus extirpated except that part of the tumour which was attached to the pterygoid process—this part was got at with considerable difficulty but was removed with very little delay

Fourth—Suture of skin flaps linen sutures used

Three months subsequent to the operation Dr Jameson summed up the condition of his patient as follows

From this time he has been gradually improving in health and the swelling of the parts diminishing under the application of the vegetable caustic applied two or three times a week. And at the present time nearly three months since the operation there is no appearance of a new growth. The velum pendulum palati is quite free the part from which the tumour was cut is rapidly assuming a healthy appearance resembling the gums in struc-

ture. His health is excellent no pains remain and so far as we can foresee there is little or no probability of a return of the disease

The case operated upon by David L. Rogers is reported in the *New York Medical and Physical Journal* for 1824. The extensive character of Rogers' operation may be noted by the following excerpt from this report

An incision was made first through the alitrum of the upper lip which was dissected from the tumour and alæ of the nose so as to turn both portions of the lip over upon the cheek. The second incision was to detach the cartilaginous portion of the septum narium from the top of the tumour. After exposing the first molar tooth on each side a fine saw was used which readily divided the superior maxillary bone including the palatine process the two incisions meeting at the palatine suture after passing through the principal bones the tumour was easily removed although it extended much farther back than was at first anticipated. It was found necessary during the operation to remove the two inferior turbinated bones a part of the septum narium the vomer and a part of the right antrum

It will be noted that the patient in each case recovered and that each operation antedated that of Gensoul of Lyons

Horatio Gates Jameson was born in York Pennsylvania in 1748. His father Dr David Jameson a graduate of the University of Edinburgh emigrated to Charleston South Carolina in 1740 later removing to York Pennsylvania where his death occurred toward the close of the eighteenth century. Dr David Jameson was an active practitioner and in addition took a leading part in the military affairs of the colonies serving as lieutenant-colonel of volunteers during the French and Indian War. He was the medical preceptor of his son who began the active practice of medicine in 1779 when seventeen years of age. After successive residencies in various Pennsylvania villages Horatio Jameson removed to Baltimore in 1810 where he attended medical lectures graduating in 1813 from the Medical College of the University of Maryland. In 1817 despairing of ever becoming connected with the University of Maryland because of professional jealousies he joined with other physicians in Baltimore in founding the Washington Medical College under the charter of Washington College of Washington Pennsylvania. In 1829 he began the publication of a quarterly medical journal entitled *The Maryland Medical Recorder*. Although ably conducted this journal suspended publication with the issue of November 1832 because of lack of financial support. In 1830

recurrence developed. Two of the patients died from local extension and sepsis and one from metastases.

In the light of these results the appropriate treatment would seem to be wide local excision that is resection of the jaw. In the cases of women and young persons conservative operation may be done if the patient will agree to submit to frequent examinations and to radical operation if a recurrence develops. A radical operation should be performed if the tumor is large or if the cuboidal type of cell predominates as this is probably the more malignant form of growth.

After resection of the jaw a prosthesis may be used or bone grafting may be done.

JAMES B. BROWN, M.D.

### EYE

Barkan O and Barkan H. Fracture of the Optic Canal. *Am J Ophth* 1928 xi 767.

For years it has been known that following a blow on the frontal region vision may be lost. The effect on vision is due to fracture of the optic canal with hemorrhage into the sheath of the nerve or laceration of the nerve or to fracture of the anterior clinoid process. General or local symptoms may be slight but perimetric fields show partial constriction in a fair percentage of cases.

The authors have seen twenty-two cases in six years and in this article report five with visual field charts. They believe that a sector defect extending to and including the macular region is sufficiently characteristic to be pathognomonic. They suggest early operation to remove pressure on the nerve.

VIRGIL WESCOTT, M.D.

James R. R. A Case of Brawny Tenonitis. *Brit J Ophth* 1928 xii 524.

In the case reported the right eye had presented a peculiar salmon tint and a semi-solid appearing chemosis of the conjunctiva for about four years and recently the left eye had begun to be similarly affected the changes being noted first at the equator of the eyeball. On pressure the area of chemosis was slightly pittef. The Wassermann reaction was negative.

This condition was described by Stephenson in 1913 as brawny scleritis but in the opinion of Collins and the author it is a tenonitis.

TESLIE L. MCCOY, M.D.

Ilene M. L. and Wyatt R. B. H. A Case of Neurofibromatosis of the Right Orbit. *Brit J Ophth* 1928 xii 513.

Neurofibromatosis affecting the eyelids is a rare condition and very seldom affects the orbit. In the case reported by the authors that of a man twenty-six years of age the right upper lid was enormously thickened and the right lower lid was sodden and ulcerated. The skin and underlying tissue in the right temporal and the right occipital region was

similarly thickened. The eye was blind the cornea being opaque and showed considerable surface vascularization otherwise it was apparently normal. The left eye and lids were normal.

As the conjunctival discharge and ulceration of the lower lid could not be controlled and the right eye was blind enucleation was performed with removal of a large part of the upper lid and the lid margins were sutured together. Recovery was uneventful.

Microscopic examination of the tissues showed that practically all parts of the eyeball and orbital contents were involved in the neurofibromatosis.

TESLIE L. MCCOY, M.D.

Corbett J. J. Plastic Dacryorhinostomy. *Am J Ophth* 1928 xi 774.

For successful results any operation on the tear sac must relieve and prevent the recurrence of both infection and epiphora. Simple extirpation of the sac will remove infection but will not relieve epiphora.

There are now three methods of operating to relieve both inflammation and epiphora: (1) the West operation an intranasal approach; (2) the Toti and Mosher Toti procedures a combined intranasal and extranasal operation; and (3) the Dupuy, Dutemps and Bourquet procedures an extranasal operation.

The author advocates the Dupuy, Dutemps and Bourquet operation and describes it in detail.

VIRGIL WESCOTT, M.D.

Vail D. T. Jr. Argyrosis of the Tarsal Conjunctiva in an Infant. *Am J Ophth* 1928 xi 782.

Vail reports a case of membranous conjunctivitis in a boy fourteen months old which was caused by the injudicious use of strong solutions of silver nitrate. When the child was a month old a mucopurulent secretion occurred in the right eye with the formation of a membrane on the tarsal conjunctiva. Six months later the left eye became similarly involved. Silver nitrate solutions varying in strength from 2 to 5 per cent were used for months. An ulcer formed on the left eye which following Saemisch section became phthisical. As diphtheria bacilli were found diphtheria antitoxin was given. On three occasions all granulation tissue and fibrous exudate was removed down to normal tissue. One radium treatment was given and resulted in a burn on the cheek.

Following an examination of tissue removed by the author Verhoeff reported that the brownish pigment granules were precipitated silver.

VIRGIL WESCOTT, M.D.

Sewall E. C. Further Development of the Transsphenoidal Approach to the Optic Foramen. *Ann Otol Rhin & Laryngol* 1928 xxxviii 839.

While optic neuritis may be secondary to any of several foci of infection the author here refers to it principally as developing from sinus infection.

# ABSTRACTS OF CURRENT LITERATURE

## SURGERY OF THE HEAD AND NECK

### HEAD

Todd H C. Aseptic Cavernous Sinus Thrombosis  
*J Oklahoma State M 115 1928 xxi 286*

Todd reports the case of a colored boy who was admitted to the hospital with pain and very rapid swelling of the left eye and orbit. After numerous examinations by ophthalmologists, rhinologists and other specialists the condition was attributed to a low grade infection of the left sphenoidal sinus causing an aseptic thrombosis of the cavernous sinus. This diagnosis was based upon (1) the history of rapidly developing exophthalmos more marked on the left than the right side which was only slightly painful but was associated with redness, engorgement and chemosis of the conjunctiva, (2) increased intracranial tension as shown by a slow full pulse (52 to 56) and marked engorgement of the veins in both fundi indicating an obstruction to the venous circulation in both eyes and (3) total absence of fever and other signs of sepsis, the red and white blood count remaining practically normal.

As a rule this condition tends to become cured spontaneously but in the case reported a subtemporal decompression was done to decrease the danger of blindness from intracranial pressure on the optic nerve.

The operation was followed by complete recovery with no impairment of vision.

In the author's opinion a thrombus in the cavernous sinus is formed as the result of extension by contiguity of tissue and in the early stages at least is aseptic.

JOHN H GARLOCK, MD

Iry R H and Curtis L. Some Orthopedic Problems of the Lower Jaw with Special Reference to Unilateral Shortening. *J Bone & Jt Surg* 1928 x 645

Unilateral shortening of the mandible causing a deformity very similar to that found in ankylosis but without limitation of the movement of the jaw usually occurs in childhood as the result of osteomyelitis and necrosis and less frequently as the result of fracture or the operative removal of a section of the mandible for tumor.

Function and appearance in such cases can be greatly improved by osteotomy or division of scar tissue to bring the chin forward and to the midline followed by restoration of continuity by bone grafting. The two most suitable forms of bone graft for the mandible are a portion of graft from the tibia and a thick graft from the crest of the ilium.

RICHARD F HENKSON, MD

Simmons C C. Adamantinoma. *Ann Surg* 1918 lxxviii 693

Adamantinomata are not uncommon but are often confused with bone cysts, benign giant cell tumors or carcinomata.

They arise most often in the lower jaw from the parodontal epithelial debris or the enamel organ. Similar tumors may occur in the hypopharyngeal region. As the epithelial cells differentiate to a greater or less degree the tumors vary in their appearance.

Grossly the tumors appear as multiple cysts centrally placed in the jaw. The cyst expands the jaw destroying the cortex.

Although the growths are usually considered benign they are of epithelial origin and potentially malignant. Two of twelve cases reviewed showed definite glandular metastases late in the disease—in one of them fourteen years after the onset. Barr found only two other cases of glandular metastases in the literature.

The tumors are of slow growth. One patient died from local extension and sepsis after two years while in the case of another a specimen showing the same microscopic picture was removed twenty three years after the first operation.

The usual history in the cases reviewed was of a slowly growing jaw tumor that had had previous treatment of various kinds apparently without being correctly diagnosed. In the more speciously studied a careful search revealed stellate cells in all, although the relative proportions of the types of cells varied within wide limits in the different specimens.

Four of the patients were males. The age of onset was between the thirteenth and seventy third years. The upper jaw was affected in three cases and the lower jaw in nine.

X ray examination shows a characteristic picture of central destruction with a single or numerous cysts. The bone may be entirely absorbed. The disease may be confused with benign giant cell tumor, odontoma, dentigerous cyst or osteomyelitis.

The condition causes no characteristic subjective symptoms. There is a central tumor and if the bone has been destroyed a fluctuating cystic area will remain. Though the diagnosis is usually based on the history of a long standing tumor, the possibility of adamantinoma should be considered whenever there is X ray evidence of a central cyst.

Contrary to the prevailing idea the results of treatment as regards permanent cures by conservative operation are encouraging. In all of ten cases in which conservative operation was performed a

Sharpe W S. The Influenza Ear. *Proc Roy Soc Med Lond* 1928 xxi 1923

During the course of influenza the author has noted several types of ear involvement. The first is characterized by the gradual onset of true nerve deafness which is of directly toxic origin and in few cases is followed by complete recovery. The second is characterized by acute myringitis with intra-membranous hemorrhages and is relieved by scarification or myringotomy if bulging occurs. The third is characterized by inflammation within the tympanic cavity with severe symptoms but is completely relieved by myringotomy if the operation is performed promptly.

Sharpe concludes that if involvement of the ears by influenza is seen early and treated energetically, surgery of the mastoid will seldom be necessary and complete recovery will usually result without complications.

MANFORD R. WALTZ M.D.

Williams T J. Tinnitus Aurium. Some Considerations of Its Causes with Special Reference to Analogies. *Ann Otol Rhin & Laringol* 1928 xxxvii 932

Tinnitus aurium is perhaps the most frequent complaint for which treatment by an aurist is sought. It is not a disease in itself nor a definite symptom of aural disease and its cause is still unknown.

Hissing sounds usually indicate a labyrinth at the point of nerve termination. Clicking is attributed to the spasmodic contraction of the salpingopharyngeus muscle. Bubbling noises may arise from an exudate in the middle ear. Pulsating or beating noises are due to circulatory disturbances. The causative factor may possibly be a general sclerosis or calcification or calcification of the eighth nerve or cortex. In some cases however the condition is of psychic or neurasthenic origin.

C. F. E. R. McGUIRE M.D.

Stoker F. The Nature of Progressive Deafness. A Degenerative Disease. *J Laryngol & Otol* 1928 xliii 64

The author states that progressive deafness is generally of insidious, symptomless and apparently causeless onset and when once initiated runs a persistent and usually uncontrollable course toward a culmination which varies from a trifling loss of hearing to total deafness. He discusses the pathological changes and the relation of degeneration to the condition.

JAMES C. GRAYWELL M.D.

Mayer O. The Pathology of Otosclerosis. *Proc Roy Soc Med Lond* 1928 xxi 189

In the author's opinion otosclerosis is should be regarded as a hyperplasia. The newly formed bone tissue is an imperfect tissue distinctly elementary in type which is never found in the labyrinth capsule in other conditions and shows marked histological variations. The variations are a feature of hyperplasia and tumors.

The otosclerotic areas in the labyrinth capsule are really pathological growths which arise in connection with embryonic maldevelopments. These areas usually appear in definite positions of the labyrinth capsule. The pre-existing bone becomes absorbed and new bone is formed.

Disturbances of development of the inner ear and other parts of the auditory organ occur in otosclerosis. There is a definite hereditary factor in this disease. Degenerative stigmata are frequently seen.

The atrophy of the labyrinth almost always found in otosclerosis is due chiefly to the lack of development of the middle ear in such cases. This is demonstrated by certain malformations and by the tendency of the connective tissue to become ossified.

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Otosclerosis may be placed in a grouping based on anomalies of the connective tissue. These anomalies are expressed by such conditions as blue sclerotics, osteopsathyrosis, osteitis deformans and hypoplasia of vessels.

W. M. PATON M.D.

Yates A L. A Working Hypothesis for Research in Otosclerosis. *Proc Roy Soc Med Lond* 1928 xxi 199

Audiographs indicate three types of deafness: (1) nerve or external ear deafness, (2) deafness due to otitis media with adhesions, and (3) deafness due to acute or subacute otitis media and otosclerosis.

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W. M. PATON M.D.

Innell F A. and Burnham H H. The Production of Otitis Media and Labyrinthitis in Rabbits. *Ann Otol Rhinol & Laryngol* 1928 xxxvii 82

These experiments were undertaken with the object of making a detailed study of the changes in the middle ear after experimental infection of the middle ear cavity.



He describes an operative procedure for the relief of nerve compression in the canal.

Anesthesia is induced by means of scopolamine and morphine sulphate the injection of 1 per cent novocain and the intranasal application of cocaine crystals. The incision is similar to that used by Sewall in the ethmoid sphenoid frontal operation but is modified to make a skin mucous membrane osteoplastic flap. The flap is to keep the frontal sinus from opening when the soft tissue retracts. The ethmoid mass is exposed and the arteries are tied. After the ethmoids have been opened the lamina papyracea is removed the sphenoid is opened and the wall between the sphenoid and the depth of the orbit is removed. The thin bone between the sphenoid and the optic nerve is removed carefully with Jansen Middleton forceps. If it is necessary to open the whole canal the dura must be laid bare.

After removal of the upper and inner canal walls there is no longer any danger of pinching the nerve. Because of the previous ligation of the ethmoid arteries no bleeding is encountered. When the operation is finished the osteoplastic flap is turned back into place and the edges of the wound are fastened with metal skin clips.

GEORGE R. McCLURE, M.D.

#### EAR

**Farmer, A. W.** The Diagnosis of Intracranial Lesions of General Interest to the Profession. Referable to Diseases of the Ear. *W. J. Austral.* 1928 11 520.

Purulent labyrinthitis of the diffuse manifest type may occur whenever there is a fistula from the infected middle ear into the labyrinth. Severe vestibular symptoms are produced including headache, violent vertigo with vomiting and spontaneous nystagmus to the opposite side. On destruction of the labyrinth the functional tests will reveal absolute deafness, absence of response to the caloric and the rotation tests and a negative fistula symptom.

Infection spreading into the middle fossa produces a subdural abscess. In the superficial type headache may be the only symptom. Headache, periorbital pain and sixth nerve paralysis indicate a deep subdural abscess. Superficial and deep abscesses also occur in the posterior fossa. Meningitis confined to the middle fossa may give rise to headache alone. In basal meningitis headache is usually localized but may be general. Lumbar puncture is a valuable diagnostic procedure and not dangerous. The fluid is under increased pressure and is cloudy or purulent. In tuberculous meningitis the fluid is clear and opalescent.

Temporal lobe abscess may pass through two stages: (1) a manifest stage in which signs and symptoms are present and (2) a latent stage which may last for several months with no symptoms beyond headache. In the manifest stage there is

drowsiness with headache localized to the temporal-parietal lobe. Sometimes tenderness is found in this area on percussion. Nystagmus is rare except when the abscess ruptures into the ventricle. Choked disk is seldom seen. A fairly constant sign is partial hemianopsia on the same side as the lesion. Anomias and paraphasia are common.

Sinus thrombosis follows a parietal abscess. The symptoms of sinus thrombosis are euphoria, a typical type of temperature with rigors, hamatogenous icterus of the conjunctiva, petechia of the skin and choked disk. Choked disk appears late in the disease.

In cerebellar abscess nystagmus is an important sign. It is usually coarser than the nystagmus due to suppurative disease of the labyrinth. It may be toward either side but is more usually toward the side of the lesion. It increases as the pressure becomes greater. Choked disk is more common in cases of cerebellar abscess than in those of temporal lobe abscess. Vomiting and headache are constant. Definite vertigo is present. The patient tends to fall toward the side opposite the one on which the lesion is located. Disdiadokokinesis is fairly constant.

An acoustic nerve tumor produces deafness, tinnitus and vertigo with facial paresis. As the tumor enlarges the fifth and sixth nerves become involved. Later the ninth, tenth and eleventh nerves are affected. The chorda tympani is affected early with consequent loss of taste in the area supplied by this nerve.

W. M. Piro, M.D.

**Davis, E. D. D.** Injuries of the Ear Arising from Fractures of the Skull. *B. J. M. J.* 1928 14, 141.

The author believes that an aural examination should be made immediately after a skull fracture as it is then possible to estimate the damage to the ear more accurately.

In the majority of basal skull fractures the middle fossa is involved and when this is the case the eustachian tube is apt to be injured. Fracture of the internal ear and labyrinth is rare. Profuse and prolonged bleeding from the external ear indicates hemorrhage from the middle meningeal artery or rupture of the lateral sinus. In cases of hemorrhage from both ears the mortality is about 66 per cent, whereas in those with hemorrhage from one ear it is about 39 per cent.

In cases in which suppuration was present before the accident the probability of meningeal infection is very great and the prognosis is correspondingly unfavorable. In cases of fracture of the middle fossa peripheral paralysis of the facial nerve occurs in about 46 per cent but recovery results after a long interval. The degree of deafness varies considerably depending on the local suppuration and inflammation but if improvement is to occur it is usually apparent within eight weeks. Suppuration calls for the establishment of free drainage through the drum and possibly mastoidectomy.

GEORGE R. McCLURE, M.D.

Sharpe W S. The Influenzal Ear. *Proc Roy Soc Med Lond* 1928 xxi 1923

During the course of influenza the author has noted several types of ear involvement. The first is characterized by the gradual onset of true nerve deafness which is of directly toxic origin and in few cases is followed by complete recovery. The second is characterized by acute myringitis with intra-membranous hemorrhages and is relieved by scarification or myringotomy if bulging occurs. The third is characterized by inflammation within the tympanic cavity with severe symptoms but is completely relieved by myringotomy if the operation is performed promptly.

Sharpe concludes that if involvement of the ears by influenza is seen early and treated energetically surgery of the mastoid will seldom be necessary and complete recovery will usually result without complications.

MANFORD R. WAITZ M.D.

Williams T J. Tinnitus Aurium. Some Considerations of Its Causes with Special Reference to Ankyloses. *Ann Otol Rhin & Laryngol* 1923 xxxiii 992

Tinnitus aurium is perhaps the most frequent complaint for which treatment by an aurist is sought. It is not a disease in itself nor a definite symptom of aural disease and its cause is still unknown.

Hissing sounds usually indicate a labyrinth at the point of nerve termination. Clicking is attributed to the spasmodic contraction of the salpingopharyngeus muscle. Bubbling noises may arise from an exudate in the middle ear. Pulsating or beating noises are due to circulatory disturbances. The causative factor may possibly be a general sclerosis or calcification of the eighth nerve or cortex. In some cases however the condition is of psychic or neurasthenic origin.

CROCKER R. McWHIRTER M.D.

Stoker F. The Nature of Progressive Deafness. A Degenerative Disease. *J Laryngol & Otol* 1924 xlv 645

The author states that progressive deafness is generally of insidious symptoms and apparently causeless onset and when once initiated runs a persistent and usually uncontrollable course toward a culmination which varies from a trifling loss of hearing to total deafness. He discusses the pathological changes and the relation of degeneration to rheumatism.

JAMES C. HIGGINSWELL M.D.

Wayer O. The Pathology of Otosclerosis. *Ir J Roy Soc Med Lond* 1924 xxi 199

In the author's opinion otosclerosis should be regarded as a hyperplasia. The newly formed bone tissue is an imperfect tissue distinctly elementary in type which is never found in the labyrinth capsule in other conditions and shows marked histological variations. The variations are a feature of hyperplasia and tumor.

The otosclerotic areas in the labyrinth capsule are really pathological growths which arise in connection with embryonic maldevelopments. These areas usually appear in definite positions of the labyrinth capsule. The pre-existing bone becomes absorbed and new bone is formed.

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The organism used was a hæmolytic streptococcus obtained from clinical cases of scarlet fever. Two or 3 ccm of a dilute broth culture were injected at a time through the tympanic drum membrane at intervals of from two to four weeks. While the animals recovered promptly after the first injection it was noted that recovery became progressively more delayed. A few weeks after the last injection the animals were killed and the temporal bone was fixed in formalin, decalcified, sectioned and stained with hæmatoxylin and eosin.

Abundant evidence of inflammatory bone disease and attempts at bone repair were found. In many instances the stapes had been attacked. Masses of granulation tissue were present. In one case the labyrinth had become involved through the oval and round windows. **GEORGE R. McALIFF, M.D.**

**Lewy A.** The Influence of Fluorine on the Bony Labyrinth of the White Mouse (*Mus Musculus Albinus*). Preliminary Report. *Arch Otolaryngol* 1928 viii 375.

Lewy states that fluorine is a factor in bone metabolism. In the white mouse its influence seems to extend to the bony labyrinth of the ear, an observation which suggests to the otologist the possibility of using fluorine in the treatment of otosclerosis. **JAMES L. BRASWELL, M.D.**

**Turner A. L. and Fraser J. S.** Labyrinthitis: A Complication of Middle Ear Suppuration. A Clinical and Pathological Study. *J Laryngol & Otol* 1928 xliii 609.

Of thirty one cases of labyrinthitis in which the authors made microscopic studies the condition followed acute middle ear suppuration in five and chronic purulent otitis media in twenty six. Only three cases with involvement of the inner ear could be attributed to acute middle ear suppuration.

Of the twenty six patients with labyrinthitis following chronic middle ear suppuration all but three were under thirty one years of age. The cause of the original ear discharge was ascertained in seven cases. In five it was measles and in two scarlet fever.

Cholesteatoma was noted on otoscopic examination at operation or on subsequent microscopic examination in twenty of the twenty six cases. Perisinus abscess was present in eight cases. There was only one case of serous labyrinthitis. In six cases circumscribed labyrinthitis was found in the lateral canal and in one case in the cochlea. The purulent stage was noted in thirteen cases but in five of these there was evidence of granulation or connective tissue. **JAMES C. BRASWELL, M.D.**

**Portmann G.** Vasomotor Affections of the Internal Ear. *Proc Roy Soc Med Lond* 1928 xxi 197.

Vasomotor disturbances may be considered as among the most pathognomonic and the most important affections of the internal ear. The symptoms are vertigo caused by sudden vasodilatation

following spasm such as occurs in the syndrome of Lermoyez or by a pronounced ischæmia of the labyrinth such as occurs in Meniere's disease. Tinnitus indicating cochlear involvement and produced either by vasoconstriction or vasodilatation. Vestibular irritability evidenced by hyperexcitability in vasoconstriction and vasodilatation and deafness caused by vasoconstriction.

The angospasmodic syndrome of the labyrinth includes (1) tinnitus (2) deafness and (3) sympathetic hypertony. The syndrome of hypertony is the same with the addition of vestibular hyperexcitability and sympathetic hypertony. Both syndromes may alternate, one may predominate over the other or at times the sympathetonic may predominate at the level of one organ and the parasympathetic at the level of the other.

The causes of vasosympathetic troubles and therefore of labyrinthine vascular spasms may be mechanical, endocranial, toxic or psychic. The most important causes acting on the regulating apparatus are the action of the nervous system and the action of the endocrine glands, especially the suprarenal. **MARTIN R. WATZ, M.D.**

**Fenton R. A. and Larsell O.** The Mechanism of Pain Transmission in Certain Types of Otalgia. *Ann Otol Rh & Laryngol* 1928 xxxvii 139.

The authors state that investigation of the neuro-histology of the sphenopalatine region is difficult because of the lack of fresh material and the inadequacy of degeneration studies of fibers and cells in an area so complex. Vasomotor changes in the trigeminal ganglion or pressure in the sphenopalatine sensory distribution stimulates the palatine seventh and other visceral sensory fibers. Such impulses passing through the great superficial petrosal nerve to the geniculate ganglion, come into relation to the somatic sensory cells and fibers of the ramus cutaneus facialis, transferring the pain impulse to the auricular and mastoid region. **GEORGE R. McALIFF, M.D.**

## NOSE AND SINUSES

**Thelsen C. F.** Ethmoiditis in Infants and in Young Children with Accompanying Eye and Orbital Complications. *Arch Otolaryngol* 1928 viii 386.

The author reviews thirty one cases of ethmoiditis in very young children. In six there were eye and orbital complications and in six others the ethmoiditis was associated with maxillary sinusitis.

The most frequent causes of ethmoiditis are common colds, scarlet fever, measles, influenza and diphtheria. The condition is favored by enlarged tonsils and adenoids, tuberculous tendencies and congenital syphilis.

The best aid in the diagnosis is the X-ray. Thelsen believes that conservative treatment is indicated especially in the cases of children. To improve aeration of the sinuses he uses an ephedrine

spray. He employs radical operative measures only when severe eye, orbital or systemic complications are present and then operates externally through a Killian incision.

Six cases in which operation was necessary are reported  
GEORGE R. McALLIFF, M.D.

**Sewall E. C.** The Diagnosis and Treatment of Chronic Maxillary Sinus Infection. Extension of the Technique to Include Control of Haemorrhage by Ligation of the Terminal Branches of the Internal Maxillary Artery and Resection of the Middle Meatal Wall Giving Operative Approach to the Ethmoid and Sphenoid Sinuses. *Arch Otolaryngol* 1928 viii 405

In the diagnosis of chronic maxillary sinusitis the history, the symptoms, the findings of the physical X-ray and cytological examinations and the results of irrigation must be taken into consideration. Sinusitis is to be suspected in cases of recurrent colds in rapid succession in which smears and the cytological examination show an increase in the number of leucocytes. Negative roentgenograms in the presence of a nasal discharge cannot be regarded as conclusive evidence of the absence of sinusitis.

If possible, persons suffering from chronic maxillary sinus infection should move to a region with a warm dry climate. The non-operative treatment of the condition consists in the use of local measures to decrease swelling in the nose and promote drainage. When surgery is indicated, the author performs a radical Caldwell-Luc operation with removal of the middle meatal wall. To prevent bleeding, the terminal branches of the internal maxillary artery are ligated where they enter the nose. The infra-orbital and supra-orbital ethmoid cells are exenterated and the sphenoid is drained. If necessary, a fronto-ethmoidectomy is performed later. All of the surgery is done under local anesthesia. One hour before the operation, the patient is given 1/100 gr of scopolamine and 1/2 gr of morphine. procaine hydrochloride is injected along the gingivopalatal margin and cocaine crystals are applied intranasally.

GEORGE R. McALLIFF, M.D.

## MOUTH

**Blair V. P., Brown J. B. and Wornack N. A.** Cancer In and About the Mouth. In: *St. J.* 1928 lxxviii 705

Cases of cancer in and about the mouth are grouped by the authors according to the anatomical site of involvement chiefly because of the relation of the latter to the treatment and prognosis and because such a grouping facilitates classification, history taking and presentation.

The term carcinoma of the jaw is not used because bone involvement is secondary and only incidentally influences the treatment.

Growths with wide extension or metastases are put in the group corresponding to the primary site of the growth. There are cases of tumors of the neck in

which no primary growth site can be determined but the majority of neck tumors are metastatic from some unrecognized growth in the upper respiratory or digestive tract.

Four arbitrary clinical stages are distinguished which are of practical use as a basis for treatment and prognosis from clinical findings.

Biopsies are done in most cases before treatment is begun both for confirmation of the diagnosis and for the determination of the relative degree of malignancy of the growth.

In arriving at a plan of treatment and the prognosis, clinical and microscopical findings are considered together. No one criterion has been found to offer an accurate basis of prognosis as regards life.

Growths may be held in relative abeyance for a time but later take on much more rapid growth if not a true increase in malignancy. In the cases reviewed there was a higher percentage of undifferentiated growths in the late than in the early stages.

There has been observed a type of growth that in its clinical aspects is cancer but in which the microscopic picture does not show the typical definition of cancer. Such growths may cause great destruction if they are not treated at least locally as cancer.

The degree of malignancy of metastatic gland carcinoma follows fairly closely that of the primary growth. There may be no microscopic evidence of malignancy in the regional glands but this does not necessarily mean that the glands are not affected.

Of the cases reviewed the results were of course best in those in which no carcinoma was found in the glands. However, there were cases in the series showing that undifferentiated carcinoma even in the glands of the neck is not an absolutely hopeless condition.

The operative mortality was high—27.5 per cent. All but one of the deaths occurred in advanced cases in which very radical operations had been done.

The farther back in the mouth and pharynx the operation is carried the higher the mortality. This is probably due to increased liability to respiratory infection.

The results of treatment are tabulated.

JAMES B. BROWN, M.D.

**Fairchild F. R.** Cancer of the Lower Lip. Suggestions as to Operative Technique in Plastic Repair. *Arch Surg* 1928 xvii 630

In the operation for cancer of the lower lip which is advocated by the author, vertical incisions are made at each side of the tumor through the entire thickness of the lip and are connected at their lower ends by a transverse incision. The cancer then being removed in a rectangular mass. The vertical incisions are then prolonged downward in an obliquely vertical direction to mobilize a flap of tissue to be used in the formation of the body of a new lip. In the free dissection of this submental flap, any involved glands are excised. In the next step, buccal mucous membrane flaps are prepared as a lining for the skin flap and sutured with interrupted sutures of chromic catgut. The original skin flap and mucous

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The best aid in the diagnosis is the X-ray. Thelisen believes that conservative treatment is indicated especially in the cases of children. To improve aeration of the sinuses he uses an epibednuc

aureus. The patient later developed many metastatic infections and died at the end of three months. Autopsy showed that the suppuration had occurred in an adenoma and by burrowing had lifted the capsule from the right and left lobes. The gland was filled with adenomata which showed signs of recent inflammation.

Burhans points out that the rich blood supply and the production of thyroid hormone tend to prevent infection of the thyroid while the physiological changes of puberty, menstruation and pregnancy, acute infections and the formation of adenomata tend to lower the resistance of the gland.

Thyroiditis may be of the acute or chronic type. The acute type may resolve or go on to suppuration and gangrene.

The condition occurs more frequently in females than males. It may result from direct trauma or infection of the gland by way of a persistent thyroglossal duct, direct invasion from contiguous structures or metastasis by way of the lymphatics or blood stream. Metastasis by way of the blood stream is the most common mode of infection.

The chief symptoms are pain over the thyroid swelling of the thyroid or of an adenoma, tenderness of the thyroid, chills and fever, coughing, hoarseness and aphonia, dyspnoea, dysphagia and thyrotoxicosis. In case of abscess there will be fluctuation in the tumor mass and redness of the overlying skin.

Thyroiditis must be differentiated from hypertrophy of the adolescent thyroid, hemorrhage into the gland, malignancy, glossitis, abscess formation at the base of the tongue, bronchial and thyroglossal cysts, perichondritis of the laryngeal cartilages and cellulitis and phlegmon of the neck.

The prognosis is generally favorable if the condition is recognized early and treated properly.

The treatment should usually be conservative in cases of the non-suppurative variety and surgical in cases with suppuration. PAUL W. GREELEY, M.D.

Ilanzlik P. J., Talbot E. I. and Gibson E. E. Continued Administration of Iodide and Other Salts: Comparative Effects on the Weight and Growth of the Body. *Arch. Int. Med.* 1928, vol. 579.

The authors studied the effects of the administration of iodides and other salts on the weight and growth of rats during from one seventh to seven twelfths of the life span of these animals. They draw the following conclusions:

1. The continued administration of iodide in small daily doses in food over long periods (covering from about one seventh to seven twelfths of the span of life) to rats caused moderate though variable increases in weight and growth of the body in

the majority of the animals on a complete dietary. The same tendency was indicated in rats on a deficiency diet.

2. The dosage of iodide employed corresponded to that which may be employed under clinical conditions but was probably greater than that used as iodized table salt.

3. In contrast to the results obtained with iodide were those obtained with sulphocyanate, bromide, arsenic, thallium and manganese used as controls under the same conditions. These salts reduced the body weight and growth and arsenic and thallium caused fatalities.

4. The results obtained with the iodide corroborate and correlate with interesting and important results obtained with small doses of iodide reported in the literature of veterinary medicine.

5. Hence there is no reason to believe from these experiments that the prolonged use of iodide in small doses under ordinary conditions is detrimental. On the contrary, the results along various lines indicate that it is beneficial. This would not apply to the continued use of iodide in specific condition of the thyroid or to large doses of the drug.

JACOB M. MORA, M.D.

Adamson G. L. and Cameron A. T. The Pre-Operative Treatment of Graves Disease by a Combination of Iodized Fatty Acid and Vitamins A and D. *Canadian Med. Ass. J.* 1938, vol. 40.

Harvey noted that in goats fed with cod liver oil which contained a slight amount of iodine, more iodine passed into the milk than when a corresponding amount of iodides was fed. This observation suggested that some of the constituents of cod liver oil have an influence on iodine metabolism.

Rabinowitsch suggested the use of a preparation of iodized jeoleic acid incorporating the vitamin concentrate of cod liver oil. This preparation is called vitiodum.

In a series of eleven cases of Graves disease the authors made investigations to determine whether the iodine fraction, the vitamin fraction or the combination of the two is necessary for the favorable results obtained by Mason and Rabinowitsch using vitiodum instead of Lugol's solution. In two cases they found that neither the vitamin nor the iodine fraction alone gave the beneficial results obtained with vitiodum. The effect of vitiodum in reducing the pulse and the basal metabolic rate is similar to that of Lugol's solution.

The glands removed after the administration of vitiodum were histologically similar to those removed after treatment with Lugol's solution.

F. S. MODERN, M.D.

flaps are then sutured and brought into place as a new lip.

The advantages of this operation may be summarized as follows:

1 There are no contractures to decrease the size of the mouth.

2 There is no interference with the most radical extirpation of the tumor along with glandular enlargements.

3 The operation may be completed in one stage.

4 There is no tightening of the lip.

5 A sulcus of normal depth is formed in front of the incisors.

GEORGE K. McCLIFF, M.D.

### PHARYNX

Hueper W. C. and O'Connor D. Agranulocytic Angina. *Laryngoscope* 1928 xxxviii 879.

The authors report five cases of agranulocytic angina. All terminated fatally. No evidence of contagiousness of the disease was proved.

The unknown toxic element in the condition injures not only the granulocytic system but also the lymphatic system as evidenced by the marked absolute decrease in the lymphocytes in the blood and atrophy of the lymphatic tissue in the spleen and lymph nodes.

MAURICE R. WAITZ, M.D.

Mollison W. M. Dysphagia Due to Pharyngeal Paralysis. *Proc. Roy. Soc. Med. Lond.* 1928 vii 1777.

Dysphagia due to paralysis of the pharyngeal wall is uncommon. The different types are (1) the central or nuclear from bulbar paralysis localized hemorrhage or embolus; (2) the intracranial or intranuclear from pachymeningitis and tumors; and (3) the extracranial at the base of the skull from tumors, glandular involvements, diphtheria and lead poisoning.

Paralysis of the pharynx from central lesions as described in the textbooks is unusual. As a rule it is progressive and fatal, but the author reports six cases with recovery in five. In most of these the condition occurred following a marked straining effort such as that of coughing or vomiting and examination showed a small hemorrhage into the bulb. After recovery there was a residual pharyngeal weakness.

The author reports also a case of pharyngeal paralysis due to peripheral nerve paralysis, two cases due to poliomyelitis and two cases due to a lesion at the base of the skull.

FRANK B. BERRY, M.D.

### NECK

Winkelbauer A. Experiments with Regard to the Physiology of the Thyroid (Experimentelles zur Physiologie der Schilddrüse). *Beitr. z. kl. u. Chir.* 1928 cxlii 707.

Based on his work on Breiten's studies on the histological picture and the functional activity of

the thyroid Winkelbauer made a series of experiments on animals to determine what happens as regards the iodine content of the thyroid when the gland has been reduced in size by one-half and increased demand are made on the remaining tissue demands which according to the results of Breiten's experiments are manifested by increased secretion.

In six dogs one-half of the thyroid was extirpated and its iodine content determined. The quantitative determinations were made according to Fellenberg's method. From ten to fourteen days later the remaining half of the thyroid was removed and its iodine content determined.

It is to be assumed that iodine plays an important rôle in the production of a fully normal secretion. This is evident from the particularly high iodine content of the thyroid. Therefore if the thyroid represents in a fashion the central depot for iodine in the organism then under normal conditions a certain quantity of gland tissue corresponds to a certain quantity of iodine—of course in one and the same individual. When the gland is decreased in size by one-half the remaining half which is doing more work than before without doubt requires more iodine and since the two halves may be assumed to be of approximately the same size it is to be expected that the organism will place twice the quantity of iodine at the disposal of the remaining portion of the organ. Accordingly we would expect to find about twice the quantity of iodine in the remaining lobe of the thyroid.

It was discovered however that while the iodine content of the remaining lobe was increased in some cases considerably the increase never amounted even approximately to double the first quantity perhaps because of an increase in the discharge of gland secretion from the remaining thyroid tissue. In a dog with a pronounced colloid struma a very marked difference was found in the iodine content of the two halves. Here the increased secretion was clearly evident. According to Winkelbauer this is brought about only through the fact that the pathologically changed gland does not possess the capacity of normal gland tissue to pick up rapidly the iodine offered it by the organism and thus repair the deficit. It appears that the pathological changes of the colloid struma include not only an enlargement and increase in volume of the gland and the retention of colloid but also a disturbance of the capacity of the gland to take up iodine.

LEONARD (Z)

Burhans E. C. Acute Thyroiditis: a Study of Sixty-Seven Cases. *S. & Gynec. & Obst.* 1928 xlvii 478.

Acute thyroiditis is more common than is generally believed. The author has found more than 200 cases recorded in the literature. He reports a case in which a diagnosis of acute thyroiditis was made on the basis of the swelling in the neck was opened under local anesthesia and drained. Cultures of the pus showed staphylococcus

meningomyelocele strongly favor this conception. Case 3 differed only in that the hydrocephalus was less marked and slower in development. The explanation is that some of the channels opened and allowed a partial distribution of fluid.

In Case 4 there was an acquired form of hydrocephalus due to adhesions formed by a meningococcus meningitis. Although this case was histologically different from the first three cases the effect was the same.

In Case 5 there was a history of trauma without evidence of infectious meningitis. The presence of degenerating blood elements and the patchy distribution indicated a sterile reactive leptomeningitis, a posttraumatic posthemorrhagic organizing process in the pia arachnoid. As many areas remained patent the hydrocephalus was mild.

These cases are interpreted as supporting Dandy's observations on communicating hydrocephalus. Dandy claims that the subarachnoid space with its mesothelial lining is an absorbing surface while according to Weed the fluid filters through the pachionian bodies. Both Dandy and Weed agree that a patent subarachnoid space is essential for the normal distribution of cerebrospinal fluid and that a reduction in the absorption of cerebrospinal fluid causes hydrocephalus.

To distinguish between the obstructive and communicating forms of hydrocephalus a neutral solution of phenolsulphonaphthalein is injected into the ventricles. In the obstructive type the dye is not recovered in fluid obtained by spinal puncture and there is almost no excretion of the dye by the kidneys in two hours. In the communicating type the dye is found in the spinal fluid immediately and from 2 to 5 per cent is excreted by the kidneys in two hours.

E S PLATT M D

**Victor P. The Spinal Dagger Thrust: the Initial Symptom of Certain Subarachnoid Hemorrhages. An Essay on Spinal Meningeal Hemorrhages (Le coup de poignard rachidien symptôme initial de certaines hémorragies sous arachnoïdiennes. Essai sur les hémorragies méningées spiniales).** *Presse méd.* Par 19 8 xxvi 964

In addition to the traumatic or spontaneous cerebrospinal hemorrhages which are usually fatal hemorrhages of another type have now become well known as the result of studies of the cerebrospinal fluid. The latter are spontaneous subarachnoid hemorrhages seldom fatal which occur most frequently in young persons.

The initial symptoms are constant and very striking. In apparently good health the patient is taken suddenly with pain between the scapulae which quickly becomes very severe and to a certain extent tends to radiate to the base of the skull. The patient may believe he has been stabbed in the back. Rigidity of the cervical region quickly follows with slight opisthotonus.

The clinical picture is that of acute meningitis—the "musket hammer attitude" positive Lasèque

Brudzinski and Kernig signs exaggeration of the tendon reflexes with symmetrical symptoms of pyramidal irritation painful rigidity of the legs producing sometimes a pseudoparaplegia and frequently incontinence of urine and feces.

The cerebral symptoms are in the background inconstant and dissociated. The semi-comatose state is largely the result of the intense suffering. Occasional symptoms are nausea vomiting, photophobia sensitiveness of the eyes to pressure alteration of the light reflex prolonged screaming (hydrocephalus type) i.e., the symptoms of increased pressure of the cerebrospinal fluid. Localized symptoms are entirely wanting. Toward the second day fever results from the absorption of blood.

Puncture shows the spinal fluid to be bloody and under tension but in no respect different from the fluid obtained in other types of meningeal hemorrhage.

This syndrome is considered an entity because it cannot be made to fit into any of the standard classifications. There are no signs of cerebral hemorrhage or hematomyelia. It has long been known that hemorrhage alone can cause spastic paraplegia and when it involves the cauda can disturb the sphincters. The hemorrhage in these cases is purely meningeal and spinal. Another distinctive feature is the absence of an apparent cause. The hemorrhage is not simply a complication of a tumor aneurism or tuberculous or syphilitic infection.

Only seven cases certainly belonging in this category have been reported. In three there were purely spinal symptoms and at autopsy extensive subarachnoid hemorrhages were found. No spinal punctures were performed. In the four others the symptoms allowed the same diagnosis and spinal puncture relieved them by releasing a bloody fluid. In one case the diagnosis was confirmed after death from bronchopneumonia.

On the basis of these few cases the following classification is suggested: (1) an extensive form resembling Landry's paralysis (2) a cervical form which is apt to cause death by producing pressure on the vital centers (3) a dorsal form typified by the author's two cases and (4) a lumbar form in which sciatic pain and disturbance of the sphincters predominate.

The differential diagnosis from acute meningitis is aided by the absence of evidence of infection and by the character of the spinal fluid.

The etiology is obscure but it appears probable that a great variety of diseases which predispose to hemorrhage may provoke meningeal hemorrhage.

The treatment consists in spinal puncture repeated as necessary to relieve the pressure. The prognosis is generally favorable although a subdural hemorrhage is capable of producing permanent disturbance in the spinal centers.

ALBERT F. DE GROOT M D



# SURGERY OF THE NERVOUS SYSTEM

## BRAIN AND ITS COVERINGS CRANIAL NERVES

Blind Sutton Sir J Hydrocephalus A Study in Phylogeny and Pathology *Lancet* 1925 ccxv 687

On each side of the cerebellum immediately adjacent to the flocculus is a tuft of choroid plexus continuous with the choroid plexus covering the roof of the ventricle. These tufts extend into each lateral recess where the foramina of Luschka are found. The orifice of the lateral recess is in contact with a depression on the inner wall of the petrous portion of the temporal bone which lodges the bulbous end of the endolymphatic duct. The third primary vesicle develops into the fourth ventricle and villi sprout from the velum. It is not known just when the lateral angles of the fourth ventricle burst into the subarachnoid space but this probably occurs when the chorionic villi become active and the pressure of fluid makes vents through the least resistant parts of the wall. This activity occurs about the fourth month of intra uterine life and if the escape of fluid is hindered the cavities of the brain become dilated an effect parallel with that produced on a kidney by blockage of the ureter. The choroid plexus performs a function for the brain similar to that which the renal epithelium performs for the body in general and complete obstruction of the intraventricular communications is as inimical to life as complete obstruction of both ureters.

The embryology of the brain indicates clearly that the primary vesicles form a closed sac and that communication with the subarachnoid space is secondary. Failure of such communication brings on fetal hydrocephalus similar therefore to fetal hydronephrosis. A study of the skull in the cartilaginous state shows on the inner face of the periotic cartilage an orifice posterior to the internal auditory meatus the aqueductus vestibuli which contains the endolymphatic duct and ends as a bulb under the dura. In contact with this bulb lies the lateral recess of the fourth ventricle. Such proximity indicates a close relationship between the endolymph and the ventricular fluid. In certain cartilaginous fishes the endolymph is separated from the water only by kin and the auditory capsule lodging the bulb of the ductus endolymphaticus is in close relationship to the orifice of the lateral recess. In a study of embryo dogfish Alexander found that at the spot where the lateral recess comes into contact with the skull capsule the cartilage which elsewhere is thick is reduced to a thin membrane which alone separates the endolymphatic cavity and the fourth ventricle.

When the lateral process becomes occluded in the human fetus the cerebellum fails to develop and the fourth ventricle becomes a sac bulging through the median gap and producing an occipital meningocele. Many examples of congenital hydrocephalus are due to prenatal bilateral occlusion of the lateral recesses of the fourth ventricle.

Otologists may attempt to relieve such conditions by puncturing the endolymphatic sac. Surgeons may relieve hydrocephalus not by tapping the lateral ventricles through the vault of the skull, but by incising the lateral recesses at the base.

GILBERT C. ANDERSON M.D.

Globus J H Communicating Hydrocephalus So Called Idiopathic Hydrocephalus *Am J Dis Child* 1915 xxxvi 680

With recognition of the causes of the various forms of hydrocephalus the term idiopathic hydrocephalus is being abandoned. One form of ventricular hypertrophy with stasis of the cerebrospinal fluid is due to an obstruction to the normal outflow from the ventricles such as a tumor, ependymitis or congenital atresia. In this type of internal hydrocephalus termed obstructive hydrocephalus there is an excessive accumulation of cerebrospinal fluid in every ventricular compartment anterior to the obstructive lesion.

The communicating type of hydrocephalus is defined by Dandy as a form in which all the ventricle are in free communication with the subarachnoid space around the spinal cord. This form is caused by the closure of many or all of the subarachnoid channels over the brain surface a condition which may be produced by adhesions resulting from meningitis by developmental anomalies in which the subarachnoid channels fail to open at crucial points thus keeping the main cisternæ walled off from the main distributing channels or by neoplasms obstructing one or more cisternæ at the base of the brain.

The author reports five cases diagnosed clinically as internal hydrocephalus in which at autopsy he injected India ink into the subarachnoid space by cisternal puncture.

In two of the cases there was almost complete obliteration of the subarachnoid channels particularly at their origin from the cisternæ. Inflammatory exudative or productive changes were absent and the pia arachnoid membrane retained embryonal features indicating that a developmental defect was responsible for the failure of the subarachnoid space to attain the normal patency of its distributing channels. The absence of fever and of a history of infection in these two cases and the presence in Case 2 of another malformation spina bifida with

meningomyelocle strongly favor this conception. Case 3 differed only in that the hydrocephalus was less marked and slower in development. The explanation is that some of the channels opened and allowed a partial distribution of fluid.

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E. S. FLANNERY, M.D.

**Milhon P.** The Spinal Dagger Thrust: the Initial Symptom of Certain Subarachnoid Hemorrhages. An Essay on Spinal Meningeal Hemorrhages (Le coup de poignard rachidien: symptôme initial de certaines hémorragies sous arachnoïdiennes. Essai sur les hémorragies méningées spinales). *Presse Méd.* Par. 1925. xxvii, 964.

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GILBERT C ANDERSON MD

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Hajek's collected statistics show 107 cases of cerebral abscess following frontal sinus suppuration. Extension of the infection occurs most directly as the result of necrosis and perforation of the posterior plate and next most directly as the result of thrombophlebitis of veins anastomosing with dural veins. Osteomyelitis may also be a factor.

Geiber states that the absence of symptoms is the most characteristic feature of this condition. Headache is the most common symptom but is rarely of localizing value. Vomiting may occur early and should arouse suspicion especially if it is unrelated to the taking of food. Choked disk is a positive sign but may not be present. Eagleton found nerve head changes only 3 times in over 100 cases of frontal lobe abscess. An early diagnosis must be based upon the etiology and signs of increased intracranial pressure. In some cases pneumoventriculography has been of value.

The results following surgery show a high mortality. Of 208 cases reported by 2 observers 55 were operated upon but recovery resulted in only 20. The author believes that the mortality may be reduced by following the technique of King, Elsberg or Cahill.

GILBERT C. ANDERSON M.D.

#### Frazier, C. H. Operation for the Radical Cure of Trigeminal Neuralgia. *Int. Surg.* 1918 Lxxviii 534

Frazier reviews over 1,200 cases of trigeminal neuralgia, 511 of which were treated surgically.

He states that in his opinion the fifth nerve is chiefly responsible for the sensations of pain, touch and temperature in the face and for taste on the anterior two-thirds of the tongue.

He describes his operative procedure for trigeminal neuralgia and gives suggestions for obviating some of the common difficulties. The advantages of conserving a portion of the sensory root are enumerated and the postoperative management is described.

ERIC OLDBERG M.D.

#### SPINAL CORD AND ITS COVERINGS

Jaroschky, W. Late Injuries of the Spinal Cord—Compression Myelitis—with Severe Scoliosis (Leber Spätschädelgengen des Puerkennmarks—Kompressionsmyelitis—bei schweren Skoliose). *W. u. M. Chir.* 1928 cxlii 507

To two cases of congenital scoliosis that he reported previously the author adds three new cases of his own and two cases observed by Elmslie. The last five cases showed a very characteristic disease picture. Without any external cause or any increase in the curvature there suddenly appeared in the scoliosis that had been present since childhood the signs of a transverse lesion which led in a short time to severe spastic paraplegia of the legs, sensory disturbances and occasionally slight bladder and rectal disturbances.

Neurologically this disease picture is differentiated from that of other cord lesions by the fact

that the injury affects the entire transverse section uniformly without the complete loss of individual functions for a long time. In pronounced cases myelography shows a total permanent obstruction at the site of the lesion which usually lies at the level of the fourth to the seventh thoracic vertebrae. In the effort of the dural sac and the spinal cord to adapt themselves to the curvature they are stretched over the angulation of the spinal canal and move against the concavity of the curvature being thereby pushed into that part of the spinal canal which as the result of the typical dislocation and deformity of the vertebral foramen in the dome of the curvature shows a distinct constriction in the sagittal diameter although it is not necessarily made smaller as a whole. Consequently the nerve elements are affected more by a circulatory disturbance of the thin walled veins and lymph vessels than by direct pressure. A venous stasis is produced in the spinal cord long before the nerve elements are injured.

The investigations of Stewart, James and Riddoch have shown that the meningeal veins and the small intramedullary veins at the level of the compression and farther away are often greatly dilated and their walls thickened and that there is an edema in the vicinity of the blood vessels below the site of compression and obliteration of the lymph space. Only after this process has been present for a long time do the nerve elements undergo degeneration. There then results obliteration of the arteries with local necrosis of the nerve elements. Many factors suggest that increased growth or disparity between the growth of the vertebral column and the growth of the spinal cord is responsible for the injury. In the five cases reviewed by the author this was indicated by the fact that the transverse lesion did not appear until the second half of the second decade of life although the scoliosis had been present since childhood.

The treatment of choice in these cases is laminectomy adequate enough to reveal the mechanical factors involving the cord. In the cases reviewed by Jaroschky there was no circumscribed pressure effect upon the spinal cord and when the dura was opened the cord prolapsed. However the dura should be sutured only when suture is possible without tension. Of the cases described four were operated upon with a complete cure in three and considerable improvement in one. In the case treated conservatively only slight improvement resulted.

STEGEMANN (7)

Petit, Dutailhès, D. A Contribution to the Surgery of Spinal Cord Tumors. Technique and Results in Twenty Personal Cases (Contribution à la chirurgie des tumeurs intra rachidiennes technique et résultats d'après 20 cas personnels). *J. de chir.* 1928 xxvii 129

The treatment for spinal cord tumors is surgical treatment. The majority of spinal cord tumors are benign, enucleable and radio resistant.

**Sargent Sir P. On the Removal of Cerebral Tumors** *Brit J Surg* 1928 xvi 305

The author describes briefly his technique for intracranial exploration and his method of removing the two types of tumor—endothelioma and circumscribed glioma—which he believes can be extirpated. His methods do not differ from those in general where electrosurgical procedures have not supplemented purely surgical methods. Sargent apparently prefers local excision to radical lobectomies. For cases in which the neoplasm involves important cortical areas he advises decompression and roentgen therapy. F. H. C. OGDEN, M.D.

**Laschi G. The Inclination of the Quadrilateral Plate in the Normal and Pathological Sella Turcica** (*L'inclinazione della lamina quadrilatera nella sella turcica normale e patologica*) *Rad. of med* 1928 xi 755

The author shows the importance of the quadrilateral plate in the morphology of the sella turcica its variations under pathological conditions and the great value of its position in diagnosis.

He studied the inclination of the quadrilateral plate by making calculations on many roentgenograms of normal and pathological skulls and determined the value of the angles between the perpendicular tangent to the chiasm, the sphenoidal plane and the plate itself.

One of these angles is the basilar angle or angle of Landert which is generally known to roentgenologists and is used by many of them in judging the inclination of the quadrilateral plate. This angle is of value however only in the very rare cases in which the plate and the chiasm lie in the same plane (6 per cent of the author's cases).

The angle which shows the constant and certain index of the inclination of the plate is that between the plate and the sphenoidal plane. This fact is confirmed by a study of the angles in pathological cases.

In cases of tumor within the sella for example the basilar angle varies only within the limits of the normal while the angle between the quadrilateral plate and the sphenoidal plane falls below normal minimal values.

The angle between the plate and the chiasm is not of any special value as it may vary depending on account of different positions of the chiasm.

Landert's angle is of value in cases of acromegaly in which it is larger than normal.

AUDREY G. MORGAN, M.D.

**Balado M. and Franke E. Anatomicosurgical Considerations Based on Six Cases of Abscess of the Cerebrum** (*Consideraciones anatomico quirurgicas sobre seis casos de absceso del cerebro*) *Arch argent de med* 1928 xi 171

In three of the authors six cases of abscess of the brain the lesion was of traumatic origin and in two of otic origin. In one it was a metastasis. The causes of death in the five fatal cases were meningitis

in three cases, cachexia in one case and acute hypertension in one case.

The pathologic anatomical picture depends somewhat on the stage of evolution of the condition. When the walls of the abscess are well established seven separate layers may be distinguished with the microscope. From within outward there is first the abscess content consisting mostly of polymorphous leucocytes, lymphocytes and fat cells all more or less fragmented. The second layer is made up mostly of loose connective tissue cells of recent formation which contain globules of fat. The third layer is made up largely of adult connective tissue. New capillaries may be seen in this layer. The fourth layer is distinguished from the third by the presence of infiltrative elements—plasma cells and large and small lymphocytes are distributed throughout the connective tissue elements. The fifth layer is characterized by a greater number and more orderly arrangement of infiltrative cells. The sixth zone shows destruction of nervous tissue and scant tissue reaction. The seventh layer is characterized by the destruction of nervous tissue with absence of inflammatory elements.

Evacuation of the abscess is not sufficient to lower the intracranial tension. The hypertension is due not only to the size of the abscess but also to the edema of the surrounding layers. The treatment should include ample resection of the abscess walls to healthy nervous tissue. Simple drainage without treatment of the cerebral pyogenic membranes leaves the most active part of the process untouched.

WILLIAM R. MEXIA, M.D.

**Sprowl F. G. Rhinogenic Frontal Lobe Abscess** *Report of Two Cases* *Ann Otol Rhin & Laryngol* 1928 xxxvii 922

Frontal lobe abscess complicating suppuration of the nasal accessory sinuses is infrequent as is evident from the fact that fewer than 150 cases have been reported. Nevertheless it is the most common intracranial complication of such suppuration.

The author's first case was that of a man of forty years. Several months after a purulent nasal discharge the patient developed headaches, vomiting, without nausea and vertigo with impairment of vision. Examination showed bilateral choked disk with hemorrhages. Operation disclosed pus in the frontal sinus perforation of the posterior plate and a sinus tract leading into a large abscess cavity. Drainage by tube was followed by recovery.

The second case was that of a child of fourteen years who was operated upon for orbital cellulitis and later developed headache, malaise, anorexia and vomiting. Upon examination a beginning elevation of the disks with engorgement of veins was found. Re-operation and exploration with a brain needle failed to disclose pus. At a subsequent exploration however an abscess cavity was found. This was unroofed according to the technique of King. Three months later the operation was repeated and was followed by recovery.

Twelve intradural extramedullary tumors were operated upon with one immediate death. Two patients died three and four months after the operation respectively. The operative death was caused by a difficult to explain intracranial tension which forced the tonsillar lobes of the cerebellum into the foramen magnum. Of the late deaths one was due to a permanent paraplegia and the other to a urinary infection and a decubitus ulcer. There were four complete and five almost complete cures. The time required for recovery of function was in direct relation to the promptness of the operation and varied from fifteen days to three years.

In four cases of intramedullary tumors there was one operative fatality. The patient died after the first stage of a two stage operation. This was the only case in which removal of the tumor seemed possible. Two patients eventually succumbed from extension of the lesion. One has survived for two years under radiotherapy and is believed to be cured.

ALBERT F. DE GROOT, M.D.

Rieder, Anterior Root Sensibility (Zur Frage der Vorderwurzel ensibilitaet) *Zeitschrift f. Chir.* 1928 liv 814

The question as to whether the anterior roots contain sensory fibers was investigated in experiments on sixty eight dogs. The posterior roots were divided and the animals then kept under observation for nine months. In forty five of the dogs a superficial and deep sensibility were demonstrated. In the remaining twenty three errors in the operation were discovered at autopsy.

After division of all the posterior roots from the tenth dorsal downward there was complete absence of sensibility in the lower extremities.

The abdominal sympathetic of the dog and the cervical sympathetic of man show no pain conduction on electrical stimulation in the absence of connecting loops. After division of the lower posterior cervical and all posterior dorsal lumbar and sacral roots the animal shows no pain reaction to irritation of the splanchnic. In addition to careful observation of the animals for objective signs denoting pain the pain reaction was determined by kymographic registration of the blood pressure.

In the discussion of this report LEHMANN pointed out that dissimilar animals were used for the experiments and that in the investigation of various factors such as the sensibility of the extremities the technique of the operation differed. He cited the fact that Foerster demonstrated a dull pain sensation after extensive resection of the posterior roots and that resection of the corresponding anterior roots resulted in the loss of all pain sensation. The existence of a sensory conduction in the anterior roots is further proved by the observation that even after division of the posterior roots the central stump of a divided anterior root is sensitive to pain.

In his concluding remarks RIEDER referred to the ease with which errors may occur in division of the posterior roots and emphasized that proof of a

sensory conduction in the anterior roots can be established only by careful clinical observation confirmed by autopsy.

FISCHER (Z)

## PERIPHERAL NERVES

Forbes A. A Note Concerning the Effect on Their Function of Stretching Nerve Trunks. *New England J. Med.* 1928 xciv 553

Nerve trunks of frogs usually continue to exhibit their function after being subjected to considerable surgical trauma in dissection and removal but in the case of the sciatic nerve of the cat the author noted that action current failed to appear after ordinarily careful dissection with protection from drying and other injury.

To determine whether the failure of function was caused by tension during dissection sciatic nerves were removed very carefully from decerebrated cats with the use of very sharp instruments and arranged so that tension could be applied to them and measured. A tension of 1 gm caused impairment of function and a tension of 100 gm applied for one second practically abolished action current.

In similar experiments on frogs it was found that a tension of 200 gm applied to the sciatic nerve produced no appreciable decrease in action current. The frog is therefore able to withstand about ten times as much trauma as the cat.

If the difference in size between the sciatic nerve of man and the cat is taken into consideration it can be readily understood how the use of a tension of from 30 to 40 kgm in the treatment of sciatic produces a blocking of the sensory impulses.

In anastomosing peripheral nerves the surgeon is often compelled to apply tension and apparently it does not materially retard regeneration but the results of the authors experiments indicate that because of the susceptibility of mammalian nerves to tension even moderate stretching should be avoided if possible. GILBERT C. ANDERSON, M.D.

Schnek F. A Complete Subcutaneous Tear of the Cervical Plexus (Subcutane vollstaendige Zerreissung des Plexus cervicalis). *Monatsschrift f. Unfallk. u. Verletzt.* 1928 xciv

The patient whose case is reported was a man who had been hit and knocked to the ground by a heavy transmission belt which struck him on the right shoulder and right side of the head. The injury was followed by repeated attacks of vomiting. Examination revealed a contusion wound in the right temporal region, hemorrhage from the right inner ear, a subconjunctival hematoma of the right eye and paralysis of the right facialis. The tonus of the muscles of the extremities was normal except in the right arm which when lifted fell back limp. There were no extravasations of blood or skin abrasions in the region of the right shoulder joint.

On the following day the right arm was greatly swollen as far as the shoulder and slightly cyanotic and exhibited complete flaccid paralysis. The

The aid of the neurologist is necessary to establish the diagnosis and to determine the level of the tumor. When this has been accomplished more exact localization by the injection of lipiodol is of great value usually enabling the surgeon to proceed directly to the site of the lesion. In the rare cases in which the lipiodol and the neurological signs disagree the surgeon should rely upon the latter.

The contra indications to operative treatment are few. According to Elsberg operation is futile when the condition has been present for longer than three years. In the author's opinion it is contra indicated only if the paraplegia has been present that long. The character of the paraplegia must also be considered. When the lesion does not involve the cauda a flaccid paralysis indicates irreparable destruction of the cord. An eschar is of no importance if it does not involve the site of the proposed operation.

Before operation any urinary infection or chronic nephritis should be dealt with as well as possible.

In the author's cases the operation is performed under ether anesthesia induced by inhalation or rectal injection. Rectal injection is used only when the operation is to be performed in the cervical or upper dorsal regions. Ether is well supported even when the operation is prolonged to three and a half hours. Local anesthesia is unsuitable because the duration of the operation can never be foretold.

The patient is placed in the position of ventral decubitus. Lowering the head increases rather than decreases the loss of cerebrospinal fluid. By means of a sand bag the dorsal curve of the vertebral column is increased or diminished depending upon whether the tumor is dorsal or ventral to the cord.

In all except two of the cases reviewed lipiodol injection showed the exact location of the tumor. The author tattoos a line in the skin exactly over the lower limit of the shadow since when this is done the field of the operation can be greatly restricted. An incision including three spinous processes is usually sufficiently long.

The laminectomy is carried out according to the technique of Lecène. In order to avoid devitalizing fragments of muscle which may later give rise to hematoma the muscles are separated from the spinous processes by sharp dissection.

When the epidural fat is reached the field is most carefully inspected. Inconspicuous extradural tumors will sometimes be revealed especially if they are lateral and anterior. An intradural tumor causing obstruction reveal itself by a fusiform swelling with pulsation of the dural sac cephalad to the obstruction.

The incision of the membranes may be limited to the dura alone or include the arachnoid. In the latter case the dura is punctured and five minutes are allowed for the escape of the excess fluid. In this way a massive escape the cause of many deaths is prevented. When the arachnoid is preserved a tumor may sometimes be removed with the loss of only a few drops of fluid.

In the removal of the neoplasm the vascular pedicles are ligated with fine silk and sectioned and the tumor is then separated from the cord with a blunt spatula. This step is hindered by the continual accumulation in the wound of blood and cerebrospinal fluid. The field is best kept dry by aspiration.

When the tumor is ventral the cord may bulge into the wound. It must not be mistaken for the tumor. The tumor is rarely median hence in such cases the cord is usually rotated. The dorsal roots on the side of the tumor are plainly visible while those on the opposite side are hidden. The tumor may often be seen between the roots. Its removal involves section of the dentate ligament and usually of one or two dorsal roots. When the tumor is extradural the mode of approach is the same but the neoplasm is exposed by incising the dura.

During the operation the blood pressure is determined by a sphygmomanometer. If the pressure falls below 100 mm the operation is stopped and adrenalin is injected until it rises.

When the tumor is firmly fixed to the dura and its removal must include the dura the defect may be satisfactorily repaired with a graft taken from the lumbar aponurosis. Tumors of the cauda which are often large may be intimately attached to several roots their removal being therefore excessively difficult and dangerous. Elsberg advises a two-stage operation first mobilization of the tumor outside the dura and second removal of the tumor which a few days later will have freed itself from the adhesions with the roots. In a case of large soft vascular fibrogloma which could not be removed the author obtained a five year cure by radiotherapy.

Intradural tumors are usually diffuse gliomata which extend longitudinally a considerable distance. For these radiotherapy is the only means of treatment but is a feeble one. In cases of localized tumor the two stage operation is best. At the first operation the cord is incised medially over the tumor. At the second operation the tumor is found to have enucleated itself.

If hematoma is not formed the postoperative course is usually smooth. Occasionally there is a high oscillating fever but this is evidently of nervous origin. To prevent eschars the patient should be placed on an air mattress and his position changed every two hours day and night. The immediate operative course is most favorably influenced by injections of saline solution and adrenalin. The author gives from  $\frac{1}{4}$  to  $\frac{1}{2}$  mgm of adrenalin every two hours for the first twenty four hours and every four hours for the second twenty four hours.

In the author's cases a cure was obtained in 60 per cent. The total mortality was 40 per cent. Two of the deaths were immediate and six were late. In the four cases of extradural tumor there was no operative mortality. Two of the patients died later as the growths were malignant but the disease was arrested for one and three years respectively by radiotherapy.

Twelve intradural extramedullary tumors were operated upon with one immediate death. Two patients died three and four months after the operation respectively. The operative death was caused by a difficult to explain intracranial tension which forced the tonsillar lobes of the cerebellum into the foramen magnum. Of the late deaths one was due to a permanent paraplegia and the other to a urinary infection and a decubitus ulcer. There were four complete and five almost complete cures. The time required for recovery of function was in direct relation to the promptness of the operation and varied from fifteen days to three years.

In four cases of intramedullary tumors there was one operative fatality. The patient died after the first stage of a two stage operation. This was the only case in which removal of the tumor seemed possible. Two patients eventually succumbed from extension of the lesion. One has survived for two years under radiotherapy and is believed to be cured.

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The question as to whether the anterior roots contain sensory fibers was investigated in experiments on sixty-eight dogs. The posterior roots were divided and the animals then kept under observation for nine months. In forty-five of the dogs a superficial and deep sensibility were demonstrated. In the remaining twenty-three errors in the operation were discovered at autopsy.

After division of all the posterior roots from the tenth dorsal downward there was complete absence of sensibility in the lower extremities.

The abdominal sympathetic of the dog and the cervical sympathetic of man show no pain conduction on electrical stimulation in the absence of connecting loops. After division of the lower posterior cervical and all posterior dorsal lumbar and sacral roots the animal shows no pain reaction to irritation of the splanchnic. In addition to careful observation of the animals for objective signs denoting pain the pain reaction was determined by kymographic registration of the blood pressure.

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FISCHER (Z)

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If the difference in size between the sciatic nerve of man and the cat is taken into consideration it can be readily understood how the use of a tension of from 30 to 40 kgm. in the treatment of sciatica produces a blocking of the sensory impulses.

In anastomosing peripheral nerves the surgeon is often compelled to apply tension and apparently it does not materially retard regeneration but the results of the author's experiments indicate that because of the susceptibility of mammalian nerves to tension even moderate stretching should be avoided if possible. GILBERT C. ANDERSON, M.D.

Schnek, F. A Complete Subcutaneous Tear of the Cervical Plexus (Subcutane vollständige Zerreissung des Plexus cervicalis). *Monatsschr. f. Unfallheilk. u. Versicherungsmed.* 1928 xxx 22

The patient whose case is reported was a man who had been hit and knocked to the ground by a heavy transmission belt which struck him on the right shoulder and right side of the head. The injury was followed by repeated attacks of vomiting. Examination revealed a contusion wound in the right temporal region, hemorrhage from the right inner ear, a subconjunctival hematoma of the right eye and paralysis of the right facialis. The tone of the muscles of the extremities was normal except in the right arm which when lifted fell back limp. There were no extravasations of blood or skin abrasions in the region of the right shoulder joint.

On the following day the right arm was greatly swollen as far as the shoulder and slightly cyanotic and exhibited complete flaccid paralysis. The



temperature of the skin of the arm was increased and the radial pulse was absent. Later the pulse could not be felt over the radial brachial or subclavian artery.

At operation the subclavian artery showed no pulsation. The roots of the fourth fifth and seventh nerves were found torn out of the vertebrae. A piece of the sixth nerve 2 cm long remained. The clavicle was temporarily reflected. At the site of the plexus there was a hard structure 8 cm long and 4 cm wide. The subclavian artery was completely thrombosed. It was found impossible to join the ends of the nerves by suture.

Later there was a return of skin sensibility from the shoulder to the elbow but the entire arm remained atrophic and without the capacity for active motion. Flail joint developed in the shoulder. Passively all of the joints were freely movable. The accident overstretched and tore away the nerve roots and brought the clavicle forcibly against the first rib so that the intima of the subclavian artery caught between the two and was so badly injured that thrombosis occurred. HARRISON (Z)

### SYMPATHETIC NERVES

Crisle C W. Clinical Studies of Adrenalectomy and Sympathectomy. *Ann Surg* 1928 LXVIII 40

Twenty nine cases including thirteen of epilepsy, four of neurasthenia, three of endarteritis obliterans, five of hypertension and four of hyperthyroidism with hypertension were treated by adrenalectomy alone, by adrenalectomy with thyroidectomy and sympathectomy or by sympathectomy alone.

In endarteritis obliterans and hypertension the results were negligible and in neurasthenia they were inconclusive. In epilepsy the results of adrenalectomy with thyroidectomy and sympathectomy were encouraging. The end results of the treatment of hyperthyroidism by adrenalectomy cannot yet be reported but the early results show marked improvement. LEO M. DAVIDOFF, MD

Palma R. An Anatomohistological Study of the Effects of Removal of the Perineural Sympathetic (Studio anatomico istologico sulla portazione del simpatico perineurale). *Ann Ital Chir* 1928 LVII 775

The mixed nerves contain sympathetic fibers most of which run in the perineurium. They pass out from the nerve trunks and enter the adventitia of the vessels of the region. Some of them are centripetal and transmit the sensation from the arteries to the centers and some of them are centrifugal. Until a few years ago it was believed that all painful and angiotrophoneurotic conditions could be cured by perineural sympathectomy but experience has shown that this operation is not effective in every case. Some of the syndromes are due not to an affection of the perivascular sympathetic but to an affection of the perineural sympathetic. In such

cases operation on the perineural sympathetic has been carried out successfully but so far as the author is aware no histological study has been made of the effects of removal of the perineural sheath.

Palma performed perineural sympathectomy on the sciatic nerve of dogs and studied its effects on the blood supply of the nerves and on the nerves themselves. In animals limped for a few days after the operation but thereafter walked normally. The nerve trunks were increased in size by connective tissue which replaced the extirpated sheath and formed adhesions with the nerve and with the surrounding tissues. A dense newly formed connective tissue was substituted for the nerve sheath. The circulation of the nerve suffered severely from the operation; the vessels were dilated but empty and the superficial anastomoses that developed were not sufficient to supply the nerve adequately. Changes occurred in the nerve fibers beginning within a few days after the operation and later profound changes occurred in the nerve cells particularly in the peripheral part of the nerve. Within from thirty to forty days after the operation specimens impregnated with silver showed new fibrils developing between the cut ends of the sheath. Within forty-five days after the operation the regeneration of the nerve fibers was very advanced. There was less regeneration in the distal than in the proximal part of the zone in which the sympathectomy had been performed. ALFRED C. MORGAN, MD

### MISCELLANEOUS

Van Bogaert L and Verbrugghe J. The Pathogenesis and the Surgical Treatment of Caisie Crisis of Tabes Neurodromatosectomy. *Surg Gynec & Obst* 1928 LVI 513

According to the authors theory of the mechanism of visceral pain a peripheral stimulus reaches the cord and puts it into a state of activity which provokes exaggerated motor reactions in the organ concerned leading to hyperfunction with rapid exhaustion of the organ. Soon the muscles of the organ cease to be excitable the viscus becomes distended and the distention contributes an obstacle to the passage of the impulses. The blockage of the impulses overloads the afferent sympathetic system and results in stimulation of the corresponding spinal segment which is manifested by constriction and pain in the respective metameres. Pain originates in the parietal peritoneum is transmitted by the intercostal and phrenic nerves whereas that originating in the visceral peritoneum is transmitted by the splanchnics. Operations for the relief of such pain have been performed from the peripheral neuron up to the central nervous system.

In tabes the thoracovisceral pain is of three types: (1) pain with metameric topography as represented by the well known girdle pains; (2) sympathetic pain in sheets; pain in areas of variable extent without radicular or neuritic distribution—which is continuous and superficial undergoes exacerbations

causing sensations of constriction or crushing and resists most analgesic measures (3) deep gastric pain with sensory motor reactions such as nausea vomiting and gastric hyperkinesia. Nausea and vomiting are predominant symptoms and may occur separately or together or with intense head pains.

The gastric crisis of tabes is an irritative syndrome of the afferent gastric pathways. Therefore the two great vegetative arcs the sympathetic and the vagu must be considered in dealing with the disorder. There are two main types of crises the sympathetic and the vagal. The former occur with arthropathies visceral anaesthesia permanent tachycardia and abolition of the oculocardiac reflex the latter with laryngospasm abdominal pain and paroxysms of salorrhoea and gastrorrhoea.

The vegetative equilibrium of an individual at a given time is an expression of the integrative action of the sympathetic and the parasympathetic nervous systems. The pathological vegetative phenomena result from a series of disturbing factors including (1) modification of the normal amphotrophism of the subject (2) a local lesion of the organs (3) a lesion of the extravisceral or other efferent nervous paths capable of influencing the vegetative functions and (4) the functional state of the afferent routes. It is important to determine whether there is a particular mechanism and therefore a particular form of treatment for each variety. In four cases (three amphotonic and one laryngotonic) which were carefully studied for more than three years detailed observations failed to indicate whether intervention should be in the sympathetic or the vagal system. Pharmacodynamic tests were no more final. Foerster has insisted upon such a differentiation and would use the radiculospinal type of operation for the splanchnic crises and section of the sensory root of the vagus for the vagal crises. He has suggested also the importance of the phrenic nerve in certain gastric syndromes of tabes which are characterized by pain in

the shoulder hyperalgia of the neck and hiccough without nausea or vomiting.

The authors are opposed to a too strict separation of types sympathetic vagal and phrenic as in most cases there are symptoms of all three types vegetative studies cause confusion and pharmacodynamic tests do not solve the problem. The gastric crises of tabes are essentially a syndrome of irritation of the afferent pathways of the stomach at the level of the spinal roots or the root of the vagus and it is certain that the majority of the connectors of the gastric sensibility pass through the solar plexus the splanchnic major the ganglionic and vertebral chain and the white rami and reach the cord through the dorsal roots from the sixth to the tenth or even the twelfth. Posterior radicotomy has not been uniformly successful and for some years Foerster has resected the anterior roots as well. The role of the anterior roots in the conduction of sensibility has been sustained by other authorities. Lehman believes that the anterior root alone conducts deep and visceral sensibility but recent research leads him to conclude that the law of Bell holds true in man and all experimental work tends to prove that the sensibility goes exclusively through the posterior roots. After examining patients subjected to section of both posterior and anterior roots as well as the spinothalamic tracts Foerster concluded that there must be extraradicular routes by which pain can reach the central nervous system and that one of these may be the sympathetic and the rami communicantes.

The authors have tried to abolish pain by sectioning both anterior and posterior roots extravertebally by section of the intercostal nerves and combining this with resection of the corresponding rami communicantes. The technique of the operation is described and case histories are cited which seem to prove their conclusions to be correct at least so far as these particular cases were concerned.

GILBERT C. ANDERSON M.D.

# SURGERY OF THE CHEST

## CHEST WALL AND BREAST

Lockwood C D Malignant Tumors of the Wall of the Chest *Arch Surg* 1928 xvu 459

Lockwood reports a case of chondrosarcoma and a case of sarcoma of the chest wall the former treated by operation and radium irradiation and the latter by operation with both X ray and radium irradiation

He states that the majority of tumors of the chest wall are malignant The most common types are the sarcoma and the chondrosarcoma These tumors usually recur after removal The best treatment is thorough removal followed by radium or X ray irradiation

RALPH B BETTMAN MD

Cheattle G L Chronic Mastitis Cysto Adenoma and Adenoma of the Breast *Arch Surg* 1928 xvii 535

Cheattle states that the morphological appearances of chronic mastitis are identical with those of the physiologically active state of the breast at birth at puberty and in certain phases of lactation This active state becomes pathological when it is present between the thirtieth and forty fifth years of age and develops an excess of desquamative epithelial hyperplasia which induces pain by distention It possesses the same habitus as the breast at puberty to form fibro adenomata which may or may not develop acini within their formations of tumor The author has substituted for the term chronic mastitis the term desquamative epithelial hyperplasia Type A

He believes that the term cysto adenoma is a misnomer that the growths to which it is applied do not become cystic and that they cause only a dilatation of pre existing ducts and acini He believes that there are usually a series of separate tumors—papillomata and sessile epithelial growths in pre existing acini and ducts The condition is usually more diffuse than it is generally supposed to be It is also as dangerous as the multiple adenomatous papillomata of the colon

Pure adenoma of the breast is rare and is a benign tumor It differs from cysto adenoma in presenting a massive new formation of pathological adenomatous elements

HARRY W FINE, MD

Hayward The Bleeding Breast Especially in the Male (Ueber blutende Mamma insbesondere beim Mann) *Zentralbl f Ch* 1928 lv 1053

The question of the danger of the bleeding breast is still unsettled Whereas Haas Gebele and others consider this condition harmless Kloe believes it to be very serious as he sees in it a precancerous stage demanding amputation of the breast with ex-

tirpation of the axillary lymph nodes Because of this difference of opinion surgery must assume a standpoint which will give the practitioner who sees these cases first something to guide him in his treatment

The author reports a case of bloody secretion from the nipple in a man a very rare occurrence since up to the present time only 4 cases have been reported whereas about 100 cases of bloody secretion from the female breast are on record The patient aged fifty eight years came to the hospital for treatment for hypertrophy of the prostate The secretion of blood from the nipple was only a coincidental finding The left nipple appeared somewhat pushed to the side by a mass the size of a plum which was somewhat tender A chocolate colored fluid escaped from this mass on pressure and also spontaneously An oval incision was made and the breast glands were removed with the tumor Microscopic examination showed the neoplasm to be a papillary adenoma

After reviewing the literature the author comes to the conclusion that the disease described as bleeding breast does not represent a disease entity and that in every case a thorough microscopic examination should be made if possible before operation

In the discussion of this paper WENDEL reported 4 cases of bleeding breast in females He did not extirpate the breast in any case and in no instance did he observe the development of a carcinoma The condition was interstitial mastitis in which the bleeding is occasionally periodical and apparently dependent upon menstruation In 2 cases there were also small papillary tumors in the excretory ducts Wendel did only a partial extirpation up to half of the breast gland He emphasized that his findings vary considerably from the results reported in the English and American literature

STRIEDER stated that he considers the bleeding breast a precanceromatous disease requiring extirpation of the entire breast In young women the portions of the gland remaining after partial extirpation of the breast cause trouble which is another reason for complete extirpation

WEDE discussed cases of bleeding breast in which no tumor is palpable In such cases there are tiny papillomata in the excretory ducts In a case of this type which Wede has had under observation for six and one half years there has been no change and no tumor has formed Wede therefore believes that the unconditional demand for immediate sacrifice of the breast is too radical He recommends extirpation of the glandular tissue but if malignancy is not demonstrable he prefers to preserve the skin and to transplant fat under it so that the

cosmetic effect will be preserved. He presented a patient who was operated upon in this way one and one half years ago.

ROSENBERG (Z)

**Buchholz: The Treatment of Carcinoma of the Breast** (Die Behandlung des Mammacarcinoms) *Zentralbl f Chir* 1928 lv 1040

The author reports upon his experiences with 384 cases of carcinoma of the breast which were treated in the period between January 1 1906 and March 31 1924 in the Alstadt Hospital in Magdeburg. Twenty six were in the first stage 8 in the second stage 206 in the third stage and 80 in the fourth stage (Tuebingen classification). Twenty six patients of whom 1 were in the fourth stage and 3 in the third stage were not operated upon and died within three years. Within the period of observation under consideration there were 218 deaths—13 from the direct and indirect effects of the operation 21 from intercurrent diseases 6 from unknown causes and 178 from recurrences or metastases of the carcinoma (among the poor results are included the cases of 63 patients who could not be traced).

Three types of roentgen irradiation were carried out.

**Period 1** January 1 1906 to July 1 1911 multiple field irradiation with a 3 mm aluminum filter and frequent small doses repeated at short intervals.

**Period 2** July 1 1911 to October 1 1919 irradiation with the use of a 5 mm aluminum filter and an increase in the intervals and dosage.

**Period 3** October 1 1919 to March 31 1924 irradiation through 3 large fields (Wintz) with repetition of the irradiation after from three to six months.

Radium was always used in addition to roentgen irradiation.

In 121 cases only surgical treatment was given but in 237 cases operation was followed by irradiation. Of the patients in these 2 groups (those with operation only and those with secondary irradiation) 20 (24 per cent) of the first group and 138 (54 per cent) of the second group were alive after three years 27 (22 3 per cent) of the first group and 303 (45 2 per cent) of the second group were alive after five years 21 (17 4 per cent) of the first group and 71 (37 6 per cent) of the second group were alive after seven years and 13 (11 8 per cent) of the first group and 34 (24 per cent) of the second group were alive after ten years.

Of the patients subjected to combined treatment in the first period 43 8 per cent showed no recurrences after three years and 31 3 per cent showed no recurrences after five years. Of those so treated in the second period 59 3 per cent showed no recurrences after three years and 48 per cent showed no recurrences after five years. Of those so treated in the third period 53 7 per cent showed no recurrences after three years and 41 1 per cent showed no recurrences after five years. Accordingly the results in the third period were distinctly poorer

than those in the second period. The author therefore concludes that prophylactic roentgen treatment after operation gives good results when the method used in the second period is employed. He is as yet unable to report upon the results of the more recent irradiation procedures advocated by Meyer and by Holfelder.

In the discussion WENDEL stated that he reported good results from secondary irradiation therapy in 1906.

LOTSCH discussed the relationship of the histological structure of the carcinoma to the danger of metastasis and summarized his conclusions in the following sentence: We cannot say at the present time that the surgeon is duty bound to recommend roentgen irradiation after every extirpation of the breast for carcinoma.

PLUECKER said that since it has been shown in this report that the results with roentgen irradiation are better than those without irradiation patients who have been operated upon in smaller hospitals which are not equipped with modern apparatus should be referred to a specialist in roentgenology for after treatment.

KEMPF reported that he has seen very many severe roentgen burns in the smaller hospitals in and near Braunschweig and that postoperative roentgen treatment should be given only by thoroughly experienced roentgenologists.

LOTSCH stated that he had ordered a roentgen apparatus for diagnosis but he has refused to allow the installation of an apparatus for therapy unless a fully experienced roentgenologist is employed—a demand which a small hospital cannot meet.

WENDEL repudiated the claim of Weinert made at the Surgical Congress of 1926 that metastases are already present even in early cases since it has been proved that Weinert's cases were not in the early stages.

ROSENBERG (Z)

## TRACHEA LUNGS AND PLEURA

**Hill L.** The Ciliary Movement of the Trachea Studied *In Vitro*. *Lancet* 1928 ccxv 802

Hill studied the ciliary movement of the trachea in the horse sheep rabbit hen and frog under various conditions. The rate of transit of a foreign body (fine suspension of lampblack) was nearly the same in all—about 1 cm in from twenty to thirty seconds. Changing the position of the trachea from the horizontal to the vertical decreased the rate one half. The rate was increased also by stretching of the tracheal mucous membrane. Trauma caused arrest of the suspension at the point of injury. When a small area of mucous membrane was separated from the submucosa and replaced the rate of movement continued to be the same in this as in other parts of the membrane. There was an increase in the rate with an increase in temperature. In the case of the horse trachea the optimum temperature was 42 degrees C. and in the case of the hen trachea 44 degrees C. Small doses of ultra

violet rays did not accelerate the ciliary movement whereas larger doses slowed or stopped the cilia. The rate of ciliary movement was not affected by a deficiency of vitamins A and D in the diet. Chloroform was found to be much more poisonous to cilia than ether. The effect of numerous other drugs and vapors was also determined.

Hill believes that his method of study lends itself readily to tests of the toxicity of solutions and vapors used on the respiratory membrane.

JACOB M. MORA, M.D.

Baum H. L. Acute Laryngotracheobronchitis. *J. Am. Med. Ass.* 1928 xci 1097.

Observations were made on a series of twenty-four cases of acute laryngotracheobronchitis which were so severe that it became necessary to introduce a tube to prevent asphyxiation. Most of the cases were associated with acute respiratory tract infection. In two the condition was a complication of measles and in four was associated with a foreign body in the lung.

Laryngotracheobronchitis occurs almost exclusively in children. It begins as an acute rhinitis and pharyngitis with a dry croupy cough. Gradually and progressively signs of respiratory embarrassment develop. There is retraction of the suprasternal and supraclavicular spaces. As the condition progresses cyanosis is associated with paleness becomes quite marked. The cyanosis is not so severe as that seen in acute laryngeal obstruction but is characterized by a definite paleness due to exhaustion. In the author's opinion the exhaustion and cardiac strain are even more important than the respiratory obstruction being more severe.

In the diagnosis of the condition roentgenograms are important as the blocking of various bronchi can be ascertained thereby. The obstruction is usually due to a subglottic swelling of the mucous membrane. As the vocal cords are seldom involved the voice is only slightly impaired in contrast to obstruction from laryngeal diphtheria. Glottic spasm may occur. The not infrequent subnormal temperature is occasionally due to insufficient oxygenation. The mucous membrane lining the bronchi is dry, there being little secretion. The secretion is so tenacious that it is very apt to plug the bronchus. In the cases of three patients who had been subjected to tracheotomy Baum was able to relieve the dryness of the bronchial mucosa by substituting an intubation tube for the tracheotomy tube. He believes that the drying of the secretion is due to the entrance of air into the trachea directly through the tracheotomy. Therefore he advocates the use of an intubation tube before resort is had to tracheotomy. If the laryngeal obstruction persists for longer than three weeks he introduces a tracheal cannula. None of Baum's patients was over nine years of age. As therapy Baum advocates intubation for at least three weeks. At the end of that time tracheotomy may be done. In cases of obstruction from plugs, bronchoscopy with aspiration is indicated.

Of the authors twenty-four patients ten died. The cause of death was bronchopneumonia in four cases, lobar pneumonia in three cases, infectious pneumonia in two cases and plugging of smaller bronchi in one case.

ALTON OGDEN, M.D.

Wright A. J. M. Silent Tracheotomy. Its Significance. *Proc. Roy. Soc. Med. Lond.* 1931 xvi 1789.

The author points out an unusual but easily recognized accident which may occur during operations upon the upper air pass as at mouth. It is recognized from the silence following tracheotomy performed for sudden and absolute cessation of respiration during such operations. As is the case following an overdose of anesthetic there is no cough and no spontaneous attempt at respiration. No air enters on artificial respiration although there is no evidence of glottic obstruction. When the trachea is opened no sound is noted. The cause of these phenomena is a plug of tissue or small sponge which has slipped down and lodged at the tracheal bifurcation. The plug may be readily removed by the blind introduction of forceps through the tracheotomy wound.

FRANK B. BERRY, M.D.

Jackson C. Bronchoscopy Past Present and Future. *New England J. Med.* 1933 cxlvi 79.

Bronchoscopy is a development of the last thirty years. The first bronchoscopic treatment worthy of mention was the use by Coolidge in 1894 of an open urethroscope to remove a portion of a hard rubber tracheotomy cannula from the trachea through an already present tracheotomy. About six years later a distally lighted bronchoscope was invented.

Improvement of the technique, the development of teamwork, and the elimination of general anesthesia has brought bronchoscopy to such a degree of perfection that 95 per cent of aspirated foreign bodies may now be removed through the mouth with a mortality of less than 2 per cent.

A few of the most important discoveries made possible by the development of this means of examining the tracheobronchial tree are mentioned. The defensive power of the lung against air-borne infection was demonstrated when the deeper bronchi were shown to be practically sterile. As the larynx was approached bacteria were found in increasing numbers. The two obvious elements in this defensive power are the cough reflex and the ciliary action. Impairment of either of these is an important factor in the etiology of suppurative disease of the lung.

As an outgrowth of bronchoscopy the Federal Cauterizing Act was enacted to provide for the labeling of all household fire products with the word "poison." This will help to prevent strictures of the esophagus in children. Another outgrowth of bronchoscopy has been the American Bronchoscopic Society which has now fifty active members.

The present activities of the bronchoscopic clinic are enumerated as follows:

1 Endoscopy for research. Endoscopy has greatly facilitated the study of pulmonary physiology and pathology. It affords a mechanical means for the placement of materials, inert as well as infectious in the lungs and of observing the local as well as the general effect produced.

2 Endoscopy for foreign bodies. This represents today only about 2 per cent of the endoscopic examinations performed. The other 98 per cent are for the diagnosis or treatment of diseases.

3 Endoscopy for disease. In all diseases of the larynx, trachea, bronchi, pulmonary parenchyma, mediastinum, hypopharynx, esophagus and stomach direct vision biopsy and direct therapeutic or operative measures have been added by endoscopic developments to the resources of the physician and surgeon.

Among accomplishments in diagnosis and treatment is direct laryngoscopy. Formerly it was impossible to look at the larynx of a baby.

Bronchoscopic aspiration of suppurative foci which can be drained through the mouth harmlessly and without general anesthesia is now possible. It is the author's opinion that the fundamental factor in all pathological conditions of the lungs is impairment of the defensive power of the lung due to impairment of drainage and aeration. By bronchoscopic drainage the load is taken off the cilia and spontaneous drainage is established. With the restoration of aeration and spontaneous drainage the defensive power of the lungs is re-established.

In the treatment of pulmonary suppuration following tonsillectomy, bronchoscopic aspiration is the method of choice in the incipient stage.

Since bronchoscopic studies have revealed the cause of a fatal form of septic bronchitis due to vegetable substances, especially the peanut kernel, it is now possible to prevent this condition.

In spiruethrosis and Vincent's infection the diagnosis of bronchial involvement is made from uncontaminated specimens removed from the bronchi through the bronchoscope.

In many cases of supposed asthma the bronchoscope has revealed some form of mechanical obstruction of the bronchi. Hence the author's aphorism: All is not asthma that wheezes.

The mechanism of postoperative massive collapse of the lung was discovered by Lee and substantiated bronchoscopically by his co-workers. This condition is due to obstruction of a bronchus by viscid secretion. Kolmer found that the coagulation of the pus is due to an excess of fibrin. It is assumed that an excess of fibrinogen from passive congestion produces excessive viscosity. The viscid secretion can be aspirated with the bronchoscope. The result is usually prompt expansion of the lung. Coryllos and Bernbaum have demonstrated that pneumonia is essentially an atelectasis due to obstruction of the bronchi by a thick exudate and hence relatable by bronchoscopic aspiration.

4 Education of the undergraduate. The student is instructed regarding the symptoms, diagnosis,

prognosis and prophylaxis of foreign bodies in the air and the food passages but receives no training in the technique of bronchoscopy.

5 Education of the graduate. The technical difficulties of endoscopy and the methods of doing it along the systematic lines that have proved satisfactory are being offered in the larger postgraduate schools.

6 Education of the public. Civic organizations are being used to educate the public in prophylaxis. Such instruction will prevent about 85 per cent of the cases of foreign body in the air and food passages and 90 per cent of the cases of lye stricture.

The author believes that in the future massive atelectasis and suppurative disease will be treated by bronchoscopic aspiration as a first resort rather than by opiates and antituberculous which only hinder spontaneous drainage by paralyzing the cough reflex and that the surgeon, the internist and the roentgenologist will ask the bronchoscopist to add important diagnostic information to their findings.

J. EDWIN KIRKPATRICK, M.D.

Edwards, A. T. The Surgeon's Point of View of the After Effects of Surgical Procedures in Pulmonary Tuberculosis. *Brit. M. J.* 1928, II, 602.

Chandler, F. G. The Physician's Point of View of the After Effects of Surgical Procedures in Pulmonary Tuberculosis. *Brit. M. J.* 1928, II, 603.

EDWARDS states that cases of pulmonary tuberculosis in which the condition has become active again after the induction of artificial pneumothorax invariably respond well to thoracoplasty. The development of purulent fluid during artificial pneumothorax is a favorable indication for thoracoplasty as is also an infected tuberculous empyema for which drainage has been established. Thoracoplasty is indicated generally in cases in which complete unilateral artificial pneumothorax is indicated but before it is performed great care must be taken to establish the presence or absence of activity in the other lung and medical measures should be given an extended trial.

A preliminary phrenic evulsion followed by a two stage thoracoplasty from the first to the tenth rib is advocated by the author. Apicolysis and phrenic evulsion are discussed briefly and the results in fifty nine surgically treated cases of pulmonary tuberculosis are summarized.

CHANDLER discusses briefly intrapleural pneumolysis, phrenic evulsion, apicolysis, thoracoplasty, and oleothorax. He emphasizes the importance of not allowing the patient who is not doing well to pass beyond the stage in which artificial pneumothorax might be beneficial.

J. FRANK DOUGHERTY, M.D.

Joannides, M. The Etiology of Pulmonary Abscess. *Surg. Gynec. & Obst.* 1928, XLVI, 449.

From experiments carried out on dogs the author concludes that the following factors are of

violet rays did not accelerate the ciliary movement whereas larger doses slowed or stopped the cilia. The rate of ciliary movement was not affected by a deficiency of Vitamins A and D in the diet. Chloroform was found to be much more poisonous to cilia than ether. The effect of numerous other drugs and vapors was also determined.

Hill believes that his method of study lends itself readily to tests of the toxicity of solutions and vapors used on the respiratory membrane.

JACON M. MORA, M.D.

Baum H. L. Acute Laryngotracheobronchitis  
*J Am M Ass* 1928 xci 1097

Observations were made on a series of twenty-four cases of acute laryngotracheobronchitis which were so severe that it became necessary to introduce a tube to prevent asphyxiation. Most of the cases were associated with acute respiratory tract infection. In two the condition was a complication of measles and in four was associated with a foreign body in the lung.

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In the diagnosis of the condition roentgenograms are important as the blocking of various bronchi can be ascertained thereby. The obstruction is usually due to a subglottic swelling of the mucous membrane. As the vocal cords are seldom involved the voice is only slightly impaired in contrast to obstruction from laryngeal diphtheria. Glottic spasm may occur. The not infrequent subnormal temperature is occasionally due to insufficient oxygenation. The mucous membrane lining the bronchi is dry, there being little secretion. The secretion is so tenacious that it is very apt to plug the bronchus. In the cases of three patients who had been subjected to tracheotomy Baum was able to relieve the dryness of the bronchial mucosa by substituting an intubation tube for the tracheotomy tube. He believes that the drying of the secretion is due to the entrance of air into the trachea directly through the tracheotomy. Therefore he advocates the use of an intubation tube before resort is had to tracheotomy. If the laryngeal obstruction persists for longer than three weeks he introduces a tracheal cannula. None of Baum's patients was over nine years of age. As therapy Baum advocates intubation for at least three weeks. At the end of that time tracheotomy may be done. In cases of obstruction from plugs bronchoscopy with aspiration is indicated.

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ALTON OGBURN, M.D.

Wright A. J. M. Silent Tracheotomy Its Significance  
*Proc Roy Soc M d Lond* 1913 xii 1789

The author points out an unusual but easily recognized accident which may occur during operations upon the upper air passages or mouth. It is recognized from the silence following tracheotomy performed for sudden and absolute cessation of respiration during such operations. As is the case following an overdose of anesthetic there is no cough and no spontaneous attempt at respiration. No air enters on artificial respiration although there is no evidence of glottic obstruction. When the trachea is opened no sound is noted. The cause of these phenomena is a plug of tissue or small foreign body which has slipped down and lodged at the tracheal bifurcation. The plug may be readily removed by the blind introduction of forceps through the tracheotomy wound.  
FRANK B. HENRY, M.D.

Jackson G. Bronchoscopy Past Present and Future  
*New Engl J Med* 1918 cxcv 59

Bronchoscopy is a development of the last thirty years. The first bronchoscopic treatment worthy of mention was the use by Coolidge in 1898 of an open urethroscope to remove a portion of a hard rubber tracheotomy cannula from the right bronchus through an already present tracheotomy fistula. About six years later a distally lighted bronchoscope was invented.

Improvement of the technique, the development of teamwork and the elimination of general anesthesia has brought bronchoscopy to such a degree of perfection that 93 per cent of aspirated foreign bodies may now be removed through the mouth with a mortality of less than 2 per cent.

A few of the most important discoveries made possible by the development of this means of examining the tracheobronchial tree are mentioned. The defensive power of the lung against airborne infection was demonstrated when the deeper bronchi were shown to be practically sterile. As the larynx was approached bacteria were found in increasing numbers. The two obvious elements in this defensive power are the cough reflex and the ciliary action. Impairment of either of these is an important factor in the etiology of suppurative disease of the lung.

As an outgrowth of bronchoscopy the Federal Cautic Act was enacted to provide for the labelling of all household live products with the word "poison." This will help to prevent stricture of the esophagus in children. Another outgrowth of bronchoscopy has been the American Bronchoscopic Society which has now fifty active members.

The present activities of the bronchoscopic club are enumerated as follows:

Congenital syphilis rarely involves the œsophagus. In the secondary stage of syphilis a severe œsophagitis may cause dysphagia but this disturbance rapidly responds to treatment. In tertiary lues localized gummata occur usually in the upper or lower third of the canal and on rupture produce a gummatous ulcer with clear cut edges and an unhealthy yellow base. Induration and spasm soon cause obstruction of the lumen.

The diagnosis is not always easy. The dysphagia is usually painless unless a pharyngeal lesion is present. Signs of syphilis are found elsewhere in the body. The œsophageal stenosis is very gradual in its course; the dysphagia lasting for from four to twelve months before the true nature of the lesion is discovered. Direct local examination is necessary to distinguish luetic stenosis from other varieties of stricture. X-ray studies are indicated to exclude an intrathoracic cause of extrinsic pressure as well as to determine the level of the lesion.

œsophagoscopy is absolutely necessary to confirm the diagnosis. Biopsy must be performed; he cause non-ulcerating gummata closely resemble cancer. A negative Wassermann reaction should not lead the diagnostician astray as many luetics in the tertiary stage have such a reaction. Very often the diagnosis may be confirmed by a serological study of the spinal fluid. On the other hand one must be careful not to jump at the conclusion that a luetic lesion is present in the œsophagus when the Wassermann reaction is strongly positive. Many patients with cancer also have syphilis.

The treatment of œsophageal syphilis consists in anti-syphilis measures and frequent dilatation of the œsophagus with bougies.

The author reports two cases in which complete recovery resulted.

MORRIS A. SLOCUM, M.D.

Friedenwald J. Feldman M. and Zinn W. F.  
Ulceration of the œsophagus. Experimental Study. *Arch Int Med* 1928 xlii 531

From experiments on dogs the authors draw the following conclusions:

1. Ulcers of the œsophagus produced by the removal of a small section of the œsophageal wall through the œsophagoscope will heal readily within a week.

2. When œsophageal ulcers are treated with a 10 per cent solution of hydrochloric acid they will become chronic and their healing will be markedly retarded.

3. Perforation is a frequent occurrence when deep penetrating ulcers are treated with acid.

4. Uncomplicated ulcers heal readily and do not form strictures.

5. In most cases of ulceration of the œsophagus X-ray examination reveals defects and spasm which are characteristic.

6. Large penetrating ulcers may simulate diverticula.

7. An ulcer of the œsophagus is clearly demonstrated on œsophagoscopic examination.

JOHN J. MALONEY, M.D.

## MISCELLANEOUS

Roberts F. Errors in the Interpretation of Radiograms of the Chest. *Brit M J* 1928 ii 509

In the ordinary method of roentgenography of the chest with the roentgen tube at a distance of 1 ft or less from the film considerable error is introduced by the divergence of the rays. It is the purpose of this article to show how misleading such errors may be and how they may be reduced to the minimum. Detailed descriptions and illustrations are given to show exactly how they are produced. They may be responsible for lack of proper correlation of the roentgenological with the clinical findings. The greater the distance of the part examined from the film and from the midline the greater its distortion. Slight variations of the central ray also produce changes in the relative position of different parts rendering accurate duplication of roentgenograms extremely difficult.

In order to avoid the errors cited orthodiagraphy and teleroentgenography are employed. Orthodiagraphy with the use of only the central ray by fluoroscopy permits accurate recording of bold outlines such as those of the heart but does not make possible the demonstration of fine details. For the latter teleroentgenography is best adapted. It consists in increasing the distance between the film and the tube so that the errors due to divergence are reduced to the minimum. The distance usually employed is 2 meters a distance at which for all practical purposes the rays may be considered parallel. This method first suggested by Kohler originally had the disadvantage of requiring prolonged exposure but modern technique and apparatus have entirely overcome this defect. The author describes the technique he uses in detail.

ADOLPH HARTUNG, M.D.



great importance in the production of suppuration in the lung

- 1 The abolition of the pharyngeal and cough reflexes in general anesthesia
- 2 The presence of blood mucus or gastric contents in the mouth during anesthesia
- 3 The presence of fusospirochetæ in the mouth
- 4 The presence of chronic infection in the nose mouth or paranasal sinuses
- 5 The dimensions and physical state of aspirated material
- 6 The action of the cilia which clear the trachea and bronchi
- 7 The specific immunity of the lung to certain organisms

PILL W GREELEY MD

Manges W F Lung Abscess Following Tonsillectomy from the Standpoint of the Roentgenologist *Atlantic M J* 1928 xxv 909

The majority of the lung abscesses seen by the author occurred in the lower lobe on the right side and seemed to be in more or less close relation to the root area.

Manges is of the opinion that abscesses at the lung surface and not in relation to a reasonably large bronchus are probably the result of surface lymphatic invasion. Those in the interior of the lung and not in contact with the chest wall or the root area may be due to blood stream infection. Those at the root area or in the lobes near the root are probably direct bronchial infections caused by infectious material drawn into the bronchi during operation.

The size of the area of involvement however does not indicate the extent of lung tissue destruction. The author has seen marked destruction of lung tissue in a small area of involvement and has known very large areas to clear up without permanent destruction of lung tissue. As a rule the larger the area of involvement the greater the extent of destruction.

In the early stages of the disease the outlines of the bronchial tubes can be seen through the shadow of the exudate. There is little or no tendency toward sharp limitation of the lesion. As the exudate increases the bronchial shadows gradually become more obscure. When the lesion is progressing the marginal shadows remain more or less indistinct.

If bronchography is to be the method of treatment localization in relation to a lobe portion of a lobe or a bronchus is sufficient. This can usually be established fairly accurately by means of anteroposterior and lateral views or by stereoscopic films.

RALPH B BETTMAN MD

Rienhoff W F Jr and Davison W C Empyema in Infants under Two Years of Age *Arch S & E* 1928 xiv 676

Since the World War the treatment of empyema has gradually become more conservative in that closed drainage has been used more frequently than open thoracotomy. The authors analyzed eighty cases of empyema occurring in infants under two years of age who were admitted to the Johns Hop-

kins Hospital. Of these eighty cases thirty-two were not operated upon. In twenty the diagnosis was not made until autopsy. The fact that a correct diagnosis was missed in 25 per cent of the cases has the following explanations:

- 1 Because of the small chest area it is difficult to distinguish the relatively small area of dullness by percussion
- 2 Because of the associated dant or thoracic testis is not carried out as often as it should be
- 3 Roentgenograms are often of no assistance in the differential diagnosis of pneumonia and pleural effusion

The authors advise the use of fluoroscopy when fluid is suspected especially in the cases of children.

Of the forty-eight infants who were operated upon either by rib resection or the insertion of a trocar cannula nineteen (39.6 per cent) died. Of nine patients upon whom only one or more thoracenteses were performed one recovered and six died within forty-eight hours after the diagnosis of empyema was made and before an operation could be performed.

The forty-eight cases in which operation was done were studied especially to determine whether open or closed drainage is the better procedure. The mortality was highest among the infants suffering from left-sided and double empyema. About two-thirds of the cases of empyema were caused by pneumococci but in this group the mortality was one-half that of the group in which the infection was due to other organisms. In the cases with complications the mortality was four times as high as in cases without complications. Contrary to the authors' expectations the mortality was lower (9.3 per cent) in the cases in which the open method—rib resection—was used than in those operated upon by the closed method (30 per cent).

The authors conclude from their study that in cases of empyema in infants under two years of age the method of choice is open thoracotomy. Complications are less apt to occur following open drainage than following closed drainage. Open thoracotomy (rib resection) is indicated especially in cases of pneumococcal empyema as in the series of cases reviewed 90 per cent of the infants with pneumococcal empyema recovered following open drainage whereas only 50 per cent survived following closed drainage. In the entire series in which open thoracotomy was done in both the streptococcal and pneumococcal type the mortality rate was 27 per cent.

ALTON OCHSNER MD

## ESOPHAGUS AND MEDIASTINUM

Abel A L Syphilis of the Esophagus *Lancet* 1928 x 44

A diagnosis of syphilis of the esophagus is made in only 1 or 2 of every 1,000 cases of esophageal lesion. Persons with esophageal syphilis seldom apply for treatment until dysphagia occurs as the result of spasmodic or organic stenosis.

In 47 per cent of his cases of mesenteriolitis the author found streptococci colon bacilli were of secondary importance

As a rule but not always the course of the mesenteriolitis conforms to that of the appendicitis. The infection of the mesenterium may progress and lead to thrombophlebitis manifested clinically by a chill. When thrombophlebitis occurs the patient's life can be saved only by high ligation of the ileocolic vein. If hepatic abscesses are already present even this intervention comes too late. Rupture of a suppurative mesenteriolitis into the free peritoneal cavity is also greatly to be feared; the consequent peritonitis is much more serious than the diffuse peritonitis which follows the perforation of an abscess of the appendix. However most inflammatory infiltrations of the mesenterium enter upon a chronic stage with substitution by connective tissue. The mesenterium shrinks at the sites of junction of the chief lymph vessels, i.e. between the lower and middle third. At these points stenosing knots occur which cause mechanical nervous and vascular disturbances. The mechanical disturbances are most important as they are the causes of recurrence.

RIESS (21)

### GASTRO INTESTINAL TRACT

Laurinisch A. Alimentary Fever (Sulle febbri alimentari). *Idolich* Rome 1928 xxiv sez. prat. 1519

In 1906 Finkelstein demonstrated that there is a close relationship between diet and fever not only in acute febrile dyspepsia but also in infectious febrile diseases. In 1911 he reported that the substances which cause such fever are sugar and salts contained in the food which bring about fever producing chemical reactions. A necessary condition for the development of the fever is a change in the water metabolism and the water content of the body. Finkelstein does not think that the fever is caused by bacterial toxins. He believes that in febrile dyspepsia the diarrhoea and vomiting are caused by the action of bacteria but that the fever is the result of the deficiency in water brought about by the diarrhoea and vomiting.

There are three theories attributing the fever to special conditions of metabolism. The first is that in the presence of a certain deficiency of water products of protein catabolism are formed that cause fever by acting like bacterial toxins. The second is that alimentary fever is due to stagnation of heat from insufficiency in the supply of sodium chloride resulting in decreased elimination of water the fever depending not upon the absolute amount of salt but on the concentration of the solution. According to the third theory that of Rietschel the fever is due to the increased production of heat from increased metabolism. Laurinisch holds that the fever is due not to increased metabolism but to intense diuresis which causes a great loss of water. He suggests that as sometimes a glycosuria is associated

with the increase in temperature the vegetative nervous system either alone or in association with a disturbance of the trophic center may play a part in the production of the alimentary fever.

ALDREY G. MORCAN M.D.

Guthrie E. H. The Effects of Surgery of the Stomach on Its Subsequent Motor and Secretory Functions. *J. Am. M. Ass.* 1928 xci 1075

This report is based on sixty seven cases in which the following operations were performed: gastroenterostomy thirty cases, pyloroplasty twenty two cases, closure of a perforated ulcer two cases, resection three cases, gastroduodenostomy two cases, partial gastrectomy one case, division of the anterior and posterior gastric branches of the vagus one case, pylorotomy one case, Polya resection two cases, cholecystogastrostomy one case, gastroenterostomy disconnected one case and pylorotomy gastroduodenostomy one case.

A rice meal was given and ten hours later the fasting stomach contents were obtained by means of the Rehfsch tube. These fasting contents were studied with regard to quantity, consistency, character, color, free acid, total acid, mucus, pus, gross blood, occult blood, starch retention and microscopic appearance. An Ewald meal was then given and fractional examinations were made until the stomach was empty. Usually on the following day the stomach was examined roentgenologically after a barium meal. The size, shape, position, tone and peristalsis of both the stomach and duodenum were especially noted. Cases which before operation showed evidence of hypertonicity and hyperperistalsis of the stomach with a spastic pylorus and were relieved by the operation showed postoperatively absence of the spasm, hyperperistalsis and hypertonicity. In cases in which no relief or only partial relief was obtained from the operation the spasm, tetanic contraction and hypertonicity persisted. The author believes that in the absence of organic obstruction these conditions are due to perigastritis, peripyloritis and periduodenitis.

Motor function is best studied by fluoroscopic examination because especially in cases with a gastroenterostomy there is constant regurgitation into the stomach from the intestine which makes the Ewald meal unreliable.

The cases in which gastroenterostomy was done showed a shorter emptying time than those in which pyloroplasty was done.

In a not inconsiderable number of cases without symptoms both the Ewald meal and fluoroscopic studies showed delayed emptying. This observation demonstrates the importance of successive investigations after operative intervention since information may be thereby obtained which will show the possibility of future pathological function and lead to proper prophylactic measures.

The acidity of the stomach is controlled by the regurgitation of intestinal contents which contain not only intestinal but also pancreatic and biliary

# SURGERY OF THE ABDOMEN

## ABDOMINAL WALL AND PERITONEUM

David V. C. and Sparks J. L. The Peritoneum as Related to Peritonitis *Int Surg* 1928 LXVIII 672

This article deals with the absorption of toxins from the normal and inflamed peritoneum. Diphtheria toxin was used because of its known lethal properties in guinea pigs. It was found that when a known toxin was injected into the normal peritoneum of dogs it passed directly into the blood stream as well as into the lymphatics in sufficient quantities to be fatal to guinea pigs. The concentration of the toxin and chyle seemed to be greatest about thirty minutes after the intraperitoneal injection. The intraperitoneal injection of 5 c cm of a 10 per cent turpentine emulsion on two successive days caused a severe peritonitis with marked fibrin deposits and a serosanguinous fluid exudate. A study of the passage of diphtheria toxin from such an inflamed peritoneum indicated that in the presence of a plastic exudate the passage of toxin from the peritoneum into the chyle was nil and that if the toxin passed into the blood stream at all the quantity was much smaller than that entering the blood from the normal peritoneum.

The presence of a transudate favors more rapid absorption of the toxins.

The authors conclude that in the treatment of peritonitis interference with the plastic exudate formed should be avoided as much as possible. Their findings suggest also that in the early hours of peritonitis the chief danger is the absorption of toxins and bacteria into the circulation directly and by way of the lymphatics whereas later absorption from the peritoneum becomes less important and the chief danger is the development of a local condition such as paralytic ileus.

MANUEL F. LICHTENSTEIN M.D.

Romano N. and Rey S. Duodenal Drainage and Duodenal Feeding in Certain Cases of Incontrollable Vomiting in Peritonitis (*El sustraje de duodeno y la alimentación duodenal en algunos casos de vómitos incoercibles por peritonitis biliar*) *Rev Soc de med inte N.Y. Soc de t 17* 1929 89

The authors report good results from the use of the Einhorn duodenal tube in cases of uncontrollable vomiting.

Two patients with chronic plastic peritonitis suffered periods of complete gastric intolerance with marked emaciation and loss of weight. By means of intermittent duodenal feeding it was possible to relieve the vomiting and administer medication. The treatment was followed by a gain in weight.

WILLIAM R. MEYER M.D.

Steinberg B. and Goldblatt H. Peritonitis II. The Production of Active Immunity Against the Fatal Outcome of Experimental Bacterial Peritonitis *Arch Int Med* 1925 XLII, 413

A group of eight dogs were immunized by the intraperitoneal injection of a suspension of colon bacilli which had been taken from the lower intestine of another dog, suspended in saline solution, and killed by heating to 54 degrees C. for one hour. Four such injections were given at intervals of four days. Fourteen days after the last injection the immunity attempted was tested by the intraperitoneal injection of 5 gm of solid feces suspended in 15 c cm of normal saline solution. Five of the eight dogs died.

Another group of eleven dogs were similarly immunized with living colon bacilli. When tested fifteen days later by the intraperitoneal injection of feces, ten lived and one died of a serofibrinopurulent peritonitis. Of two dogs that were killed later one showed a few adhesions and the other was found normal.

Of a group of fifteen non-immunized dogs injected with a clear suspension of fecal material all died within twenty-four hours of severe hemorrhagic serous and fibrinopurulent peritonitis.

Of three non-immunized dogs which were given injections of fecal material that had been heated all survived.

The authors conclude from these experiments that in dogs it is possible to prevent death from fecal peritonitis by active immunization with colon bacilli and that killing by heat greatly diminishes the antigenic power of the organisms.

PAUL W. GREER M.D.

Fertz H. Appendicular Mesenteriolitis (Mesenteritis appendicularis) *Beitr z Klin Chir* 1928 C III 564

From the standpoint of pathological anatomy the mesenterium is involved in every case of acute appendicitis but the symptoms of the mesenteriolitis are overshadowed by the other symptoms. In this article attention is called to the dangerous complications that may arise from the appendicular mesenteriolitis and the rôle of the mesenterium in the development of so-called chronic appendicitis is discussed.

Various phases of inflammation may be distinguished: the stage of collateral irritation that of acute mesenteriolitis and that of complications. In each stage the process may be brought to a standstill by reparative processes but restoration to normal is possible only in the beginning. Later healing occurs by scar formation and adhesions or by encapsulation of the abscesses.

should be disregarded. As regards co operation he should be surgeon and radiologist he is in full accord with Paterson  
 ADOLPH HARTUNG M.D.

Horsley J. S. Some Stomachs I Have Met. *Vir gina M. Month* 19 8 IV 370

The author discusses the normal physiology of the stomach and cites several cases to show how lesions in other organs such as the appendix or gall bladder may reflexly give rise to gastric contractions and hunger pains. The best method of diagnosing gastric lesions is X ray examination.

In discussing the relation between chronic gastric ulcers and cancer of the stomach Horsley states that from 10 to 20 per cent of lesions diagnosed clinically as chronic gastric ulcer will prove to be cancer.

In conclusion Horsley reports forty one cases in which he operated on the stomach and duodenum in a period of fourteen months.

PAUL W. GREELEY M.D.

Kalbfleish W. K. Diverticula of the Stomach. *Am J Roentgenol* 1918 xv 213

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Kalbfleish and Bernstein each report one case of diverticulum of the stomach. In both instances the diagnosis rested entirely upon the roentgen ray examination and the diverticulum was an incidental finding. In the case reported by Kalbfleish the diverticulum was seen most distinctly in the oblique view with the patient in the horizontal position. In the case reported by Bernstein it was located on the lesser curvature just below the cardia. From the reports in the literature Bernstein concludes that most diverticula occur in this location whereas Kalbfleish reviews the anatomy of the stomach to arrive at the conclusion that the posterior wall near the cardia is the area of least resistance.

Bernstein reminds us that a diverticulum of the stomach may produce symptoms similar to those of a penetrating ulcer and he believes that treatment should be advised accordingly. Kalbfleish states that any decision as to treatment depends upon the symptoms. No definite rule can be laid down but it should be kept in mind that all diverticula are potentially liable to undergo cancerous change.

CHARLES H. HEACOCK M.D.

Mandl F. Inadequacy of the Weber Ramstedt Operation in Pylorospasm (Insuffizienz der Weber Ramstedtschen Operation beim Pylorospasmus). *Zentralbl f Ch* 19 8 IV 662

Hundsdoerfer places the mortality of the Weber Ramstedt operation at between 12 and 16 per cent. Death may be due to operative shock, unobserved mucosal injury, hemorrhage from the operative wound and the giving way of the abdominal sutures.

Another danger lies in not doing enough as in Mandl's case of a four months old female child who had had attacks of vomiting ever since the second week of life. At operation the pylorus from the

antrum to the pyloric vein was found to be five times thicker than normal. The mucosa was dissected free partly by dull partly by sharp dissection over an area of about 8 cm. and a fold of omentum sutured over the defect. The child vomited immediately afterward and died one week later. At autopsy the stomach was found markedly dilated and hypertrophied. The pylorus was so narrow that a medium sized sound could not be passed through it, the lumen being obstructed by a pea sized nodule of mucosa.

In 1927 at the Congress on Digestive Disturbances held in Vienna Forsell stated that the mucosa plays a rôle in peristalsis and that the autoplasmic mechanism of the mucosa acts in co ordination with the movements of the muscularis.

The danger of an inadequate Weber Ramstedt operation may be avoided by testing the patency of the pyloric canal by invaginating the mucosa into it, pressing out the gastric contents or introducing fluids into the stomach. If the pylorus is not patent dilatation by the method of Loretta pyloroplasty or gastro-enterostomy may be done.  
 MANTEL (Z)

Gallagher W. J. The Effect of Injections of Hydrochloric Acid on the Gastric and Duodenal Mucosa. *Arch Surg* 1928 xvi 613

The normal hydrochloric acid content of the gastric juice of dogs is 0.5 per cent. In experiments on seven dogs with jejunal transplants in the stomach the author injected hydrochloric acid once or twice daily in amounts of from 200 to 225 c.c. of a 0.22, 0.29, or 0.62 per cent solution. In a control group of six dogs he injected a 0.62 per cent solution in similar amounts two or three times daily.

An acute ulcer developed in two of the dogs and a chronic gastric ulcer in one. The most constant observations were acute and chronic gastritis with multiple erosions. These changes were greater when the high concentrations of acid were used.

The author calls attention to the similarity of the lesions to those found in the stomach and duodenum in man and the probable importance of hydrochloric acid in their production.

ARTHUR L. SUREFFLER M.D.

Moff H. and Flint E. R. The Depressive Influence of the Sympathetic Nerves on Gastric Acidity. *Brit J Surg* 1928 xvi 283

The purpose of this study was to determine the influence of the sympathetic nerves on gastric acidity. Evidence in favor of the depressive influence of the splanchnic nerves on the stomach is deduced from clinical observations: (1) gastric analyses in cases of hyperthyroidism; (2) the effect of thyroid feeding on gastric secretion; (3) changes produced by adrenalin and nicotine; and (4) the depressive action of the emotions on acid secretion. Such an influence is indicated also by observations on the secretion of hydrochloric acid after bilateral section of the splanchnic nerves in the dog.

secretions. The author was able to predict the degree of acidity with a fair degree of certainty from the color of the gastric contents, the more yellow the contents the less the acidity. The acid values vary considerably in a single digestive phase. The changes are due to variations in the amounts of regurgitated intestinal contents. Cases were observed in which the acid values ranged from those of achylia to those of hyperchlorhydria. In the majority of such cases there were no symptoms.

After gastro-enterostomy 58 per cent of the patients showed an acid value ranging from achylia to normal and 42 per cent showed hyperchlorhydria. After pyloroplasty 10 per cent showed acid values ranging from achylia to normal while 90 per cent showed evidence of hyperchlorhydria. After Pólvá resection one patient had acid values ranging from achylia to normal and the other had achylia. Four cases in which pylorotomy with resection was done showed achylia. In the two cases in which a perforated duodenal ulcer was closed hyperchlorhydria was found. In the case of cholecystogastrostomy there was achylia. Of the two cases of gastroduodenostomy one showed hypochlorhydria and the other achylia. In the case in which a gastro-enterostomy was done there was hyperchlorhydria. In the case of division of the gastric branches of the vagus the findings ranged from normal to hypochlorhydria.

In all examinations for occult blood during the course of the Ewald meal the reactions were positive. The author attributes this finding to trauma.

It is emphasized that in the interpretation of acid values great care is necessary as acidity varies considerably even under normal conditions.

Gasthe believes that the reduction in gastric acidity following operations on the stomach is due either to the regurgitated intestinal contents or to inhibition of the activity of the gastric glands. Associated disturbances are caused more by motor function than by changes in secretion. The regurgitation of intestinal contents has less influence on the gastric acidity two or three weeks after operation than later.

ALTON OCHSNER, M.D.

#### Cole, L. G. The Status of Roentgenology in Gastro-Enterology. *Surg. Clin. N. Am.* 1918, 13, 1007.

Roentgenology is a valuable adjunct in gastro-intestinal diagnosis but there is still controversy among roentgenologists as to whether it should be used for any purpose besides diagnosis. Formerly it was taught that in reporting his findings the roentgenologist should not attempt to interpret them in terms of pathology. Cole believes however that the findings of X-ray examination should be interpreted by the roentgenologist so that they will help in the determination of the prognosis and the type of treatment. He states that roentgenology is a highly organized specialty and not a mere laboratory aid and the roentgenologist must assume the responsibility of deciding the more serious problems of prognosis and indications for treatment.

After treatment roentgenographic examinations should be made to determine whether or not the measures used have succeeded in eliminating the pathological process. A single X-ray examination may easily lead to a faulty conclusion. This is apt to be true especially as regards the indications for treatment.

After the roentgenologist is thoroughly trained in theory and practice his skill will be greatly increased by observation of his errors at the operating or autopsy table. He should make a careful study of pathological specimens and compare the changes found with the X-ray findings upon which his diagnosis was based.

CRAIG J. GARNER, M.D.

#### Paterson, H. J. and Hernaman Johnson, F. The Fallacy of X Rays in Abdominal Diagnosis. *Brit. M. J.* 1928, 2, 593, 598.

PATERSON holds that two great fallacies exist in connection with radiology, especially in abdominal work: (1) that radiology can be a substitute for careful and thorough clinical examination; (2) that there is such a thing as a radiological diagnosis. He emphasizes that the radiologist's report should not be regarded as infallible as it may err because of fallacies incidental to the roentgen rays or the technique because of misdirection or because of interpretation. In the discussion of these possibilities illustrative cases are cited. The following conclusions are drawn:

1. If the roentgenographic findings do not support the clinical signs and symptoms the former should be disregarded.

2. Close co-operation between the surgeon and roentgenologist is desirable.

HERNAMAN JOHNSON, although agreeing with some of the general statements made by Paterson, refutes many of the specific arguments presented in support of those statements. Admitting that failure to find an organic lesion by the roentgen examination does not exclude the existence of such a lesion, he maintains that such evidence should receive proper consideration and should be carefully weighed against the clinical evidence. The importance of proper technique is self-evident although practical considerations at times impose definite limits. With regard to errors resulting from misdirection he states that such fallacies can usually be ascribed to undue limitation of the scope of examination permitted the roentgenologist. Errors in interpretation will always occur just as in other methods of diagnosis. Here competence and experience play a major rôle and the necessity for the possession of medical knowledge by the roentgenologist to draw proper conclusions is brought into evidence. Paterson's statement that there is no such thing as a purely roentgenological diagnosis he characterizes as a play with words. Roentgen findings cannot be evaluated outside the scope of medical knowledge.

Finally Hernaman Johnson takes issue with Paterson's dictum that if the roentgen findings do not support the clinical signs and symptoms the

should be disregarded. As regards co operation between surgeon and radiologist he is in full accord with Iaterson. **Adopted HARTUNG MD**

**Horsley J S. Some Stomachs I Have Met** *Vir ginia M North* 1928 lv 370

The author discusses the normal physiology of the stomach and cites several cases to show how lesions in other organs such as the appendix or gall bladder may reflexly give rise to gastric contractions and hunger pains. The best method of diagnosing gastric lesions is X ray examination.

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**PAUL W GREENLY MD**

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**CHARLES H HESCOCK MD**

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Hundsdoerfer places the mortality of the Weber Ramstedt operation at between 12 and 16 per cent. Death may be due to operative shock, unobserved mucosal injury, hemorrhage from the operative wound and the giving way of the abdominal sutures.

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**Gallagher W J. The Effect of Injections of Hydrochloric Acid on the Gastric and Duodenal Mucosa** *Arch Surg* 1928 xvii 653

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An acute ulcer developed in two of the dogs and a chronic gastric ulcer in one. The most constant observations were acute and chronic gastritis with multiple erosions. These changes were greater when the high concentrations of acid were used.

The author calls attention to the similarity of the lesions to those found in the stomach and duodenum in man and the probable importance of hydrochloric acid in their production.

**ARTHUR I SKEFFLER MD**

**Holl H and Flint E R. The Depressive Influence of the Sympathetic Nerves on Gastric Acidity** *Bull J Surg* 1928 xvi 253

The purpose of this study was to determine the influence of the sympathetic nerves on gastric acidity. Evidence in favor of the depressive influence of the splanchnic nerves on the stomach is deduced from clinical observations: (1) gastric analyses in cases of hyperthyroidism; (2) the effect of thyroid feeding on gastric secretion; (3) changes produced by adrenalin and nicotine; and (4) the depressive action of the emotions on acid secretion. Such an influence is indicated also by observations on the secretion of hydrochloric acid after bilateral section of the splanchnic nerves in the dog.

## CLINICAL OBSERVATIONS

*Gastric secretion in Craes disease* Lockwood Barker King Wolpe and Leist all report a definite tendency toward an acidity in Graves disease Neilson Boenheim Maranon and Sajous report hyperchlorhydria

A study of fifty cases of hyperthyroidism was undertaken by Moll to obtain more detailed information. The results of gastric analysis showed that there is a constant tendency toward hypochlorhydria in Graves disease the achlorhydria is more frequent in long standing cases than in the acute cases the secretion of hydrochloric acid in cases of toxic adenoma and puberty hyperplasia is usually normal or subnormal but never absent. The fact that the achlorhydria is most pronounced in the chronic cases indicates that it may be due to persistent stimulation of the sympathetic system by the thyroid toxæmia.

*The effect of thyroid feeding on gastric acidity* Rogers and Boenheim reported that thyroid feeding of animals increased the gastric secretion whereas Truesdale and Hardt reported that it had a definite tendency to depress the acidity and secretory rate.

The authors repeated the experiments believing that the previous investigations were not continued over a sufficient period of time. Of the four dogs used two showed almost complete achlorhydria one only a very slight lowering of the free hydrochloric acid curve and one a slight rise in the acidity.

The only conclusion that can be drawn from these results is that the effects of thyroid administration vary this fact explaining previous contradictory results.

*Changes produced by adrenalin and nicotine* According to Langley adrenalin and certain related substances produce effects similar to those caused by stimulation of the sympathetic nerves although there are exceptions as in the case of the sweat glands in which sympathetic stimulation has a marked effect and adrenalin has none. The mass of evidence indicates that adrenalin inhibits both the motor and the secretory functions of the stomach.

In two cases of hyperchlorhydria in man in which the effect of adrenalin was studied by Moll the injection was followed by a marked decrease in the amount of free hydrochloric acid.

The effect of nicotine on gastric acidity was observed by Moll in a series of cases of postencephalic parkinsonism in which the drug was given in the pure alkaloid form in an attempt to reduce plastic tone. A definite tendency toward hyperchlorhydria was noted.

These experiments indicate that adrenalin lowers gastric acidity by stimulating the sympathetic nerves whereas nicotine raises the acidity by paralyzing those nerves.

*The depressive action of emotions on gastric acidity* There is definite evidence that gastric motility is inhibited by psychic disturbances (Cannon). In experiments on dogs Murphy and Cannon found that gastric motility was inhibited by trauma of the testicles when the splanchnic nerves were intact but not

after section of the splanchnic nerves. Respiratory distress inhibited gastric motility only when the sympathetic and vagus nerves were intact.

Although the experimental effect of unpleasant emotions on gastric secretion has not been studied extensively the evidence on hand leaves little doubt that such emotions cause an inhibition of secretion as well as of motility. According to Brown the action of the sympathetic is more clearly seen in the inhibition of the salivary secretion than of gastric or pancreatic secretion. Bennet and Venables studied the effect of emotions on gastric acidity in a hypnotized subject. The suggestion of nausea caused delayed emptying and inhibition of secretion while the suggestion of hunger caused rapid emptying and a rise in the acidity. Great anxiety caused strong inhibition with delayed emptying.

## EXPERIMENTAL OBSERVATIONS

The effects of the sympathetic nervous supply of the stomach on hydrochloric acid secretion have not been investigated to any great extent. In experiments on dogs in which he excised the posterior and anterior nerve roots between the fourth and eighth or between the fifth and ninth dorsal segments Schupfer found a constant increase of acidity attributable to a combined increase of hydrochloric acid and to a less extent of free hydrochloric acid. Gaultier found that stimulation of the splanchnic or solar plexus had no effect on gastric acidity whereas section of the splanchnics and avulsion of the solar plexus gave rise to a constant and pronounced hyperchlorhydria.

The purpose of the experimental work reported in this article was to ascertain the effects of bilateral section of the splanchnics on the secretion of free hydrochloric acid. Fractional gastric analyses by means of a Janeway fistula were carried out on lines similar to those of an ordinary standard test meal. The section of the splanchnic was verified by postmortem examination and histological examination of the excised piece of nerve. The operative technique and experimental method are described in detail and the results are presented in tabular form.

It was found that continuous acid secretion is increased after bilateral splanchnic division. This is evident from the greater frequency with which free hydrochloric acid is found in the fasting juice the higher values attained and the comparative absence of bile. Moreover after the sympathetic denervation there is more rapid secretion of acid following the test meal the acid curve rising in the second hour in 74 per cent as opposed to 34 per cent before the sympathetic denervation. Duodenal regurgitation is not appreciably influenced although it is slightly more frequent after division of the nerves.

The interpretation of the results of these experiments is subject to certain reservations and criticisms.

1. It is probable that division of the splanchnics does not insure complete sympathetic denervation of the stomach as fibers may reach the stomach through the outer coats of blood vessels. The peripheral in-

trinsic sympathetic nervous system may compensate for the loss of control due to central denervation the stomach being comparable to the heart as an automatic organ though influenced by the intrinsic nerves. It is probable also that the vagi contain fibers inhibiting gastric secretion and thus overbalancing the effects of division of the splanchnics. These conjectures may explain the inconsistencies in the results and the fact that the hyperchlorhydria is only relative.

2 Fractional gastric analyses after a test meal do not afford reliable information with regard to the gastric secretion. The introduction of food obscures the volume of the response while the true acidity is masked by the neutralizing and diluting power of the food mass evacuation into the duodenum regurgitation and retention.

3 Observations under the same conditions vary on different occasions rendering comparisons difficult. However while the method of gastric analysis used by the author is less accurate than others it is identical with the method used in clinical diagnostic procedures and its results can be compared more easily with those obtained from clinical observations in man.

In spite of these criticisms the authors believe the evidence is sufficient to show that the sympathetic contains inhibitory secretory fibers to the stomach the excision of which has a definite action in raising the secretion of hydrochloric acid both in the fasting juice and in the gastric secretion after a standard test meal. They state that certain conclusions of clinical importance may be drawn from the observations with regard to hyperchlorhydria or achylia associated with extragastric diseases. Although a large number of these cases may be explained by atrophy of the gastric glands in debilitating conditions or by permanent damage from bacterial toxins others may be caused by persistent inhibitory reflexes (hyperthyroidism gall bladder disease). Hyperchlorhydria may be explained by neuritis of the solar plexus caused by focal infections or by a diminished tone of central inhibitory sympathetic centers as in hyperchlorhydric dyspepsia due to overwork worry and the ordinary stress of life.

E. S. PLATT, M.D.

Hosomi K. The So Called Peptic Ulcer of the Stomach and Duodenum in the Dog Which Sometimes Follows a Cholecholesty (Ueber das sogenannte peptische Geschwür des Magens und Duodenums beim Hunde das gelegentlich der Cholecholesty plastisch entsteht). *J. A. f. path. Anat.* 1928, cxliii, 720.

In fifteen experiments on dogs in which free transplants of arteries were used in plastic operations on the common duct erosions of the mucous membrane and submucous hemorrhages were found in the stomach and duodenum of seven of the animals. In one case an ulcer was formed in the duodenum while the stomach remained uninvolved. In four instances there were ulcers in the wall of the duodenum and

erosions and hemorrhages were found in the gastric mucosa.

The dogs were kept alive for at least eighty days after the operation. As the result of biliary stasis marked icterus usually developed between the fifth and seventh days after the operation. In two of seven dogs the lumen of the duct was found at necropsy to be entirely closed. In three others it was narrowed and the passage of the bile was obstructed by adhesions about the transplant. In every case the pyloric part of the stomach and duodenum was embedded in firm adhesions. The ulcers had the appearance of typical round peptic ulcers.

According to the findings of Iwasaki it cannot be assumed that the ulcers are due entirely to the obstruction of the flow of bile. Hosomi believes that the fixation of the duodenum and mesentery by adhesions and the circulatory disturbances in the hepatoduodenal ligament are among the most important factors. The primary cause of the lesion he sees in the nerve and blood vessel erosions which when secondarily infected lead to the formation of the adhesions that cause circulatory and nervous disturbances which predispose to ulcer formation. He therefore holds that peptic ulcer is a local condition and not merely a part of a general disease.

The operation and the necropsy findings in the cases of seven dogs are reported in detail.

BERGEMANN (Z.)

Gibson C. L. Acute Perforations of the Stomach and Duodenum. *J. Am. M. Ass.* 1928, xc, 1006.

Gibson reviews a series of 123 acute perforations of the stomach and duodenum treated in the First Surgical Division of the New York Hospital (Cornell Division) during the past fifteen years.

The typical cases of acute perforation are usually easy to recognize but there are many borderline conditions which give rise to confusion and the time spent for observation too often greatly jeopardizes the patient's chance for recovery. The severe protruding onset of abdominal pain with the board like rigidity of the upper abdomen is apt to lead to the diagnosis of peritonitis. It should be remembered that as the contents of the stomach and duodenum are not very septic the peritonitis develops at a later stage. The leakage of air and its presence in the free abdominal cavity like the classical sign of obliteration of liver dullness are not constant and should not delay operation. Most patients give a history of gastric disturbance.

The condition is relatively rare in women. When the perforation is more than twenty four hours old the diagnosis must often be that of appendicitis and progressive peritonitis. When the diagnosis is uncertain a fluoroscopic examination will often reveal a layer of air just under the diaphragm usually on the right side.

Before operation the patient should be given a little methylene blue by mouth as this will aid recognition of the perforation. The peritoneum



should be opened in a puddle of water so that the presence of gas may be detected. As most perforations are juxta-pyloric the pyloric region should be examined first. Closure is best effected by two layers of chromicized catgut sutures. The free fluid may be conveniently removed with the sucker. Drainage is generally useless except in late cases. The suture line may be covered with omentum, round ligament or fat. If stenosis of the pylorus exists it is wise to add gastro-enterostomy to the primary operation.

Many patients who recover from a perforation are cured of their ulcer. This observation has restrained the author from doing gastro-enterostomy as a routine procedure.

In the 123 cases reviewed there were 23 deaths following the operation, a mortality of 19.6 per cent. Of 72 cases not requiring a second operation the result was excellent in 41, satisfactory in 31, unsatisfactory in 2. Two patients could not be traced. Of 21 cases in which a second operation was necessary gastro-enterostomy was done in 17, suturing of a second perforation in 2, and gastric resection in 2. Of the 17 patients subjected to secondary gastro-enterostomy 5 had an excellent result and 10 a satisfactory result. 1 died of pulmonary tuberculosis one year after the second operation and 1 was operated upon too recently to warrant a report of the outcome. Of the 3 patients with a second perforation requiring suture 1 had a satisfactory result and 1 died from the results of psychosis. Of the 2 patients subjected to secondary gastrectomy 1 had a good result and 1 died. The mortality according to the duration of the perforation was 12 per cent after twelve hours, 22 per cent after twenty-four hours, and 60 per cent after more than twenty-four hours. JOHN W. NORTON, M.D.

#### Lauea, H. W. The Surgical Treatment of Gastric and Duodenal Ulcer. *S. G. C. & Ob. J.* 1919, vol. 11, 403.

The author reviews von Haberer's work on gastric and duodenal ulcer in his clinic at Graz, Austria. Before operation a fluoroscopic examination after a barium meal is always carried out unless it is contra-indicated, and after operation another X-ray examination is made before the patient is discharged in order that the functioning of the anastomosis and the size of the stomach may be determined. The operation is done under local and splanchnic anesthesia induced with a 0.75 per cent solution of tutocain to which a small quantity of adrenalin has been added. Before April 1915 ether was used.

The preferred method is the Billroth I procedure. This is always used when there is sufficient serosa on the posterior wall of the first portion of the duodenum to insure safe apposition of the serous surfaces for anastomosis. However the upper part of the cut end of the stomach is not closed as was originally done by Billroth. As a rule from one-half to two-thirds of the stomach is removed. Two layers of sutures are used for the anastomosis, a continuous

catgut lock stitch for the mucosa and interrupted sutures of silk for the serosa.

The second method of choice is von Haberer's modification of the Billroth I operation. This is used when the amount of serosa on the posterior duodenal wall is insufficient. The duodenal stump is closed and the cut end of the stomach implanted in the side of the second part of the duodenum below the level of the papilla of Vater. This as well as the Billroth I operation seems to favor more physiological action and the development of new sphincteric control.

The Billroth II operation is done when the two other operations are not adapted to the requirements of the case. The antecolic method seems to be preferred to the retrocolic method.

The mortality of the first method of choice is 6 per cent, that of the second and third methods 10 per cent, and that of the Billroth II retrocolic operation 18 per cent.

The Billroth I method is regarded as the most satisfactory and least apt to be followed by a recurrence or the formation of a jejunal ulcer. Of the patients subjected to this operation 60 per cent have been rendered free from symptoms or have been greatly benefited. PAUL W. GAZLEY, M.D.

#### Wright, C. The Surgical Treatment of Gastric Ulcer with Special Reference to the Malignant Ulcers. *Brit. J. Surg.* 1918, vii, 253.

Surgical treatment of gastric ulcer becomes necessary when medical treatment has failed to heal the ulcer permanently when permanent healing is unlikely because of the size of the lesion, when deformities of the stomach have been produced, and when acute crises such as hemorrhage and perforation occur.

After a severe hemorrhage surgical intervention is imperative when the patient's condition has improved sufficiently and should include the removal of the ulcer. Gastro-enterostomy is not sufficient to prevent recurrence of the hemorrhage. Many patients with chronic gastric ulcer die because of hemorrhage. In 249 cases of hematemesis from chronic ulcer reviewed by Buhner the mortality was 11.6 per cent and was higher among men than among women. In several of the fatal cases gastro-enterostomy had been performed previously.

Old ulcers result in deformities of the stomach with increasing obstruction, undernutrition and death from pain and starvation. In some cases death is hastened by tuberculosis.

The author believes that the claims made concerning the large numbers of ulcers which develop into carcinomata are unfounded and holds that the transformation of a gastric ulcer into a carcinoma is a rare event. The Mayo Clinic, Moynihan and Sherren estimate that about 70 per cent of gastric ulcers become carcinomatous, basing their conclusions on MacCarty's report on ulcers removed at operation in which associated carcinoma was found in 68 per cent. Wilson and MacCarty discovered

evidence of previous gastric ulcer in 77 per cent of gastric carcinomata and Smithies found a clinical history of previous ulceration in 60 per cent of cases of gastric carcinoma.

If the incidence of malignancy is as high as these reports indicate the results of the treatment of gastric ulcer by gastro-enterostomy ought to be appalling yet the Mayo Clinic statistics (Balfour) show that only about 6 per cent of patients so treated developed carcinoma and of this 6 per cent the majority died within two years indicating that they were probably carcinomatous at the time of operation. Other statistics show a similar low incidence of carcinomatous changes.

Surgical methods for the treatment of chronic gastric ulcer may be classified into the indirect and the direct. Two factors which are recognized as having an important influence on the development or persistence of gastric ulcers are (1) the acid character of the gastric juice and (2) conditions interfering with emptying of the stomach. All surgical procedures except simple excision of the ulcer are designed to modify these factors and therefore to modify the physiology of the stomach.

The indirect methods of operative treatment are gastro-enterostomy, pyloroplasty and jejunostomy.

Gastro-enterostomy acts mechanically by providing an efficient outlet from the stomach. Paterson and others believe that it has a physiological action also allowing the regurgitation of bile and pancreatic juices into the stomach and thereby decreasing the acidity of the gastric contents. This effect however is most marked in cases of duodenal ulcer and many observers have not noted the lowering of acidity reported by Paterson. Experimentally even diversion of the entire duodenal contents into the stomach produced only a slight lowering of acidity as did also the diversion of the bile into the stomach by cholecystogastrostomy (Weidman and Fenderlen). Perman found no diminution of gastric juice in the early days following gastro-enterostomy or following gastric resection unless the resection was extensive. It is therefore improbable that gastro-enterostomy has any effect on the gastric secretions. Moynihan also expresses this opinion.

Sacren and others hold that the stoma in gastro-enterostomy should be proximal to the ulcer which means it must be toward the cardiac end since most ulcers are well away from the pylorus. Hartman has shown that when the pylorus is patent most of the gastric content passes through the pylorus when the stoma is placed so near the cardiac end. The author therefore concludes that the outlet should be at the lowest point of the greater curvature regardless of the site of the ulcer.

Gastro-duodenostomy delivers the gastric contents into the duodenum but otherwise acts in the same way as gastro-enterostomy.

Pyloroplasty gives similar results.

Jejunostomy makes it possible to feed the patient while the stomach is supposedly at rest but as the

mere introduction of food into the jejunum excites gastric secretion the results of this operation have been disappointing.

All of the indirect methods fail in some cases since the ulcer is replaced by scar tissue itself subject to breaking down on slight provocation. Therefore most surgeons believe that a cure is obtained more frequently by resection.

Of the direct methods of operative treatment wedge resection is the simplest method of removing the ulcer but is often followed by recurrence of the lesion. Direct excision of the ulcer is now usually combined with gastro-enterostomy. Pyloric spasm believed to be due to the nerve reflex caused by ligation of the branches of the vagu on the lesser curvature is thus avoided. Therefore increased intra-gastric tension is prevented the reflux of duodenal contents is made possible and the incidence of recurrence is decreased.

The use of the cautery in the method devised by Balfour for difficult operations on high ulcers is associated with the danger of secondary hæmorrhage at the site of the cauterized ulcer. The author has found that ulcers situated near the œsophageal opening can be excised if the lesser curvature is completely mobilized. In his technique the coronary artery is divided in the left pancreaticogastric fold and the distal end together with the lesser omentum is then stripped down along the lesser curvature to the site of the ulcer.

Sleeve resection is held to be the ideal resection method as it prevents the kinking at the pylorus that occurs following wedge resection. To preserve the normal shape of the stomach the resected piece should be made longer on the greater curvature than on the lesser curvature. Gastro-enterostomy becomes difficult or impossible when this procedure is used but pyloroplasty is an efficient substitute for it.

When there is longitudinal contraction of the lesser curvature such as occurs frequently in cases of gastric ulcer the stomach becomes globular and retention results from kinking at the pylorus. This deformity requires subtotal gastrectomy.

The advantages claimed for gastrectomy in the treatment of gastric ulcer are that it abolishes gastric function and retention prevents recurrence and decreases the production of hydrochloric acid.

Wright believes the postoperative freedom from recurrence justifies resection even when the ulcer is small. He states that the risk of the operation has been exaggerated as proved by Moynihan's series of 184 cases with only 2 deaths. Wright has been unable to substantiate Hurst's claims concerning the postoperative development of pernicious anemia due to the absence of acid in the gastric juice. The resections advocated are the Billroth I and II operations or modifications of these.

Wright has obtained rapid and permanent cures from partial gastrectomy which is much better borne by patients with ulcer than by those with carcinoma.

In cases of massive ulcer it is impossible to operate without soiling the peritoneum to some extent and there is a special risk in attempting to keep the floor of the ulcer intact by taking slices of the pancreas when adhesions are present. Thorough lavage of the stomach for several days is therefore important except when contra indicated by recent hemorrhage.

When it is necessary to leave the floor of the ulcer because of adhesions, the peritoneum should be carefully packed off and the floor of the ulcer gently curetted and touched with pure carbolic acid a procedure which prevents the formation of a pancreatic fistula.

In a series of 62 cases in which the author performed partial gastrectomy for chronic gastric ulcer there were 2 deaths. This series does not include 3 operations with deaths which were performed for the arrest of acute hemorrhage since these were emergency measures. Of the 44 survivors who could be traced 4 have died since the operation from meningitis, phthisis, carcinoma and insanity respectively. The death from carcinoma occurred about one year after the operation which is taken to mean an incorrect diagnosis at operation although the diagnosis of ulcer was confirmed microscopically.

One patient developed regurgitant vomiting requiring entero anastomosis which was probably due to the use of an excessively long jejunal loop. This patient though greatly relieved still has occasional pain. In another case vomiting occurs about once a fortnight and on X ray examination food can be seen passing into the duodenal end of the bowel. The patient is in good health otherwise and is able to eat any kind of food. In 2 other cases there is occasional slight vomiting. The remaining 36 patients are in excellent health.

The only unsatisfactory results were due to a technical defect in the anastomosis which allows food to pass into the blind end of the bowel where it accumulates until relief is afforded by vomiting. Such a complication can be avoided by making the section well toward the cardiac end and using as short a loop of jejunum as possible without compressing the transverse colon.

Wright believes that considering the extent of the lesions and the pain and suffering in most of his cases the operation was fully justified by the results.

E. S. PLATT M.D.

**Black K. The Large Stoma Gastrojejunostomy**  
*Brit Med J* 1938 ii 440

In cases of gastric ulcer the author places the stomach at rest by means of a gastrojejunostomy stoma from 3½ to 4 in in diameter. This increases the rapidity of emptying.

In the technique of the large stoma gastrojejunostomy the stomach and jejunum are held by short bladed stomach forceps only at the ends, the bleeding vessels are ligated individually and the tissues are not crushed.

GEORGE J. COLLETT M.D.

**Truesdale P. E. Pylorotomy** *J Am A* 431 1938  
vol 1003

Truesdale briefly outlines the history of stomach surgery. The first pylorotomy was done by Plan in 1879 and was not successful. As early as 1881 the operation was adopted by Billroth. Billroth recognized the great muscular hypertrophy associated with cancer of the pylorus and believed that pyloric obstruction from this cause was responsible for one half of the deaths occurring before adhesions and glandular metastases became factors of importance. Billroth's operations were characterized by simplicity and are well known today as the Billroth I and Billroth II methods. In 1903 Kocher reported 75 pylorotomies with a mortality of 0.3 per cent. His method was pylorotomy followed by gastrojejunostomy, a procedure in which the much dreaded suture angle of the Billroth operation was avoided. In 1905 W. J. Mayo reported 100 pylorotomies for cancer of the stomach, 9 by the Billroth I operation, 76 by the Billroth II operation and 13 by the Kocher operation. Of the many valuable contributions made to surgical knowledge by the Mayos and Balfour none ranks higher than the work of these surgeons on carcinoma of the stomach. In 1906 Rodman was the first American surgeon to adopt pylorotomy in the treatment of gastric ulcer in the pyloric region.

Truesdale began his first series of pylorotomies in 1903. In 1934 he was able to report 8 cases in which the Billroth II method was used. All of the patients were still living and well. In this article he reviews a series of 40 pylorotomies with an operative mortality of 5 per cent. Thirty of the patients were males. Two were between twenty-seven and thirty years of age, 10 between thirty and forty years, 16 between forty and fifty years, 6 between fifty and sixty years and 5 between sixty and seventy years. One was seventy-eight years old.

Thirty patients were operated upon by the Billroth II procedure, 6 by the method of gastrojejunostomy and 4 by the Pólya operation. There were operative deaths 1 after the Pólya operation and 1 following a gastrojejunostomy. Autopsy in the cases of operative death revealed a rupture of the duodenal stump in one instance and acute dilatation of the stomach in the other. Ten patients have died since they left the hospital. Of the 30 patients now living only 1 cannot be traced. Twenty-eight of these patients expressed themselves as entirely satisfied with the operative result and their general health.

The author concludes that pylorotomy is the operation of choice for very early cancer near the pylorus and for ulcer in the pars pylorica. Gastrojejunostomy when carefully applied is a safe time saving procedure. After gastrojejunostomy the stomach tube should be employed repeatedly on the slightest evidence of acute dilatation of the stomach. In general the Billroth II operation is a safer and more satisfactory operation.

JOHN W. AUSTIN M.D.

Tenney C F Bancroft F W and Cote L G  
Gastric Ulcer Pylorotomy Pólya Anastomosis  
*Surg Clin N Am* 1928 viii 989

The authors report the case of a woman sixty six years of age whose principal complaint was frequent attacks of indigestion. After thorough examination including laboratory and X ray assistance a diagnosis of chronic cholecystitis with adhesions around the pylorus was made and cholecystectomy was performed. The pathological diagnosis was chronic cholecystitis. The patient made an uneventful recovery and was discharged as cured.

One year later she returned complaining of gastric distress. The findings of examination were much the same as before except that the secondary anemia was more pronounced. Blood was present in the gastric contents and stools and the gastric hydrochloric acid was low. X ray examination again showed a deformity of the pylorus but the condition was considered non malignant by the roentgenologist.

At a second operation performed under ethylene anesthesia after careful preparation with digitalis and blood transfusions a gastric ulcer was found and resection of the pyloric end of the stomach according to the method of Moynihan was done. Moynihan's method begins the resection at the duodenum and proceeds toward the left the anastomosis with the jejunum being started before the pyloric antrum has been excised. This method has the advantage that the beginning of the anastomosis is done in a clean field before the stomach is opened and the clamp remains on the proximal end of the stomach only a short time. Constriction of the circulation of the stomach in the region of the anastomosis being therefore avoided. It is important to bring the anastomosis through the mesocolon so that no complicating obstruction may occur. The patient had an uneventful convalescence with prompt disappearance of all symptoms.

The X ray findings at both examinations were characteristic of either carcinoma or gastric ulcer. They were nearly identical although a year had elapsed between the examinations. The failure of the deformity to increase prevented a positive diagnosis of malignancy.

The specimen showed two ulcers one involving all of the coats of the stomach. Between the two ulcers there was a bridge of hypertrophied mucosa which could be differentiated from carcinoma only by microscopic examination. This mucosa contained connective tissue which had contracted drawing the mucosa of the greater curvature into the lumen of the stomach. The smaller ulcer was submucosal and had developed since the original examination.

CYRIL J. CLARKE, M.D.

Morley J and Roberts W M. The Technique and Results of Partial Gastrectomy of Chronic Gastric Ulcer. *Brit J Surg* 1928 xvi 239.

The interest of surgeons has been centered chiefly on the technique and immediate mortality of gas

trectomy too little attention being paid to the remote effects of the operation on the general health. Extravagant statements as to the frequency with which ulcers become malignant led to extensive resections for chronic ulcers. The fact that the Pólya gastrectomy is followed by a smooth convalescence a gain in weight and immediate relief of pain caused it to be the operation of choice. The sacrifice of gastric digestion was not thought to be a serious inconvenience.

However although the Pólya gastrectomy relieves the pain and vomiting it is followed in some instances by a marked tendency toward anemia especially in patients who are anemic at the time of the operation because of repeated pre operative hematemeses.

Several cases of anemia following gastrectomy some with the typical blood picture of pernicious anemia have been reported. Hurst believes that achlorhydria is not only a concomitant but also an essential predisposing cause of pernicious anemia. Following the Pólya gastrectomy the achlorhydria is usually complete.

The hemolysis of pernicious anemia is believed to be due to bacterial toxins produced in the intestinal tract under the conditions favorable to bacterial growth which are present with achlorhydria. Knott found that in 90 per cent of cases with a normal quantity of free hydrochloric acid in the gastric juice the duodenal contents were sterile whereas in cases of achlorhydria they contained many organisms which had a tendency to be faecal in type.

Miyagawa found that the pyloric glands containing few oxyntic cells extend three tenths of the distance from the pylorus to the cardia. After a transitional area 1 cm wide there is a large area of fundus glands rich in oxyntic cells. The oxyntic cells are located chiefly in the body and central region of the stomach and are scanty in the fundus proper and the pyloric regions.

Morley believes that the Schoemaker modification of the Billroth I operation is a more physiological form of partial gastrectomy than the Pólya gastrectomy. The operative technique is described in detail.

In forty seven cases in which Morley performed a Pólya gastrectomy for gastric ulcer there were three deaths a mortality of 6.4 per cent. In five cases in which a Pólya gastrectomy was done for gastrojejunal ulcer there were no deaths. In sixty eight cases in which a Schoemaker operation was done for gastric ulcer there were two deaths a mortality of 2.9 per cent.

Of the deaths following the Pólya gastrectomy two were due to leakage of the invaginated end of the duodenum and one was due to postoperative bronchopneumonia. Of the two deaths following the Schoemaker gastrectomy one was due to pneumonia and the other that of a man of poor physique occurred a few hours after the operation from pulmonary edema. In neither case did autopsy reveal any sign of leakage.

Röntgenographic examination following a Pólya operation shows the barium meal dropping through into the jejunum with practically no retention in the stomach.

After the Schoemaker gastrectomy the barium passes through the stomach much more slowly than after the Pólya operation. The picture closely resembles the normal. In some cases there is even a normal duodenal cap.

In the investigation of clinical results following gastrectomy by the Pólya and Schoemaker methods the patients were questioned with regard to (1) the return of pain or vomiting (2) their appetite and (3) their weight record. Of those who could be interviewed personally Roberts examined the blood of both groups and performed fractional gastric analysis on the Schoemaker group only. In the Pólya cases only a little bile could be aspirated. An arbitrary standard of anaemia was set at less than 4,500,000 red cells or a haemoglobin value of less than 60 per cent. Cases operated upon within six months are not included in this report.

The results of the clinical and laboratory examinations which are presented in tabular form lead to the conclusion that the Pólya gastrectomy carries with it a serious liability to postoperative anaemia attributable to achlorhydria resulting from the operation. The anaemia was of the secondary type but in some cases anisocytosis and poikilocytosis were present.

After the Schoemaker operation the patients are markedly free from evidence of anaemia. This type of gastrectomy has a lower mortality than the Pólya operation gives better clinical results and is a simpler operation to perform. It is radical in that it removes the ulcer bearing area and the pyloric sphincter and permanently lowers the acidity but it is also conservative in that it leaves a stomach with a function approaching the normal.

The cases in which Morley performed a Pólya gastrectomy for gastrojejunal ulcer are too recent and too few to warrant conclusions as to the outcome but the clinical results to date are excellent probably because of the radical reduction of the acidity.

Test meals within six months after Schoemaker's gastrectomy showed achlorhydria. Chloride estimations proved this to be due to the absence of secretion rather than to the neutralization of acid after its secretion. A repetition of the test on six of the achlorhydric patients with the injection of 1 mgm of histamine subcutaneously to stimulate secretion showed a definite increase in chlorides in one and a secretion of acid in three. This indicates that the achlorhydria is due probably to a disorganization of the reflex or hormonal relations of the different parts of the stomach rather than to the diminution in the secreting surface. Analyses at longer intervals after the operation showed the secretory capacity to be largely or fully recovered.

After the Pólya gastrectomy test meals fail to give conclusive evidence as to whether or not the postoperative achlorhydria is to be attributed to

neutralization since as a rule only small samples are obtained from the stomach on account of the almost immediate emptying and these contain a considerable proportion of bile which has a relatively high chloride concentration. E. S. PLATT M.D.

Miller T. McW. A Pedunculated Extragastric Leiomyoma of the Stomach with Hemorrhagic Degeneration. *Brit J Surg* 1918 xvi 313.

The case reported was that of a man thirty seven years of age who had been well until six months previously when he suffered a brief attack of severe pain in the upper abdomen. Since then he had been well until two weeks before he was seen by the author when he first felt out of sorts and seemed paler than usual.

On the morning of the first day of his illness he had eaten a hearty breakfast. Two hours later while at work he noted a vague discomfort in the epigastrium. This discomfort gradually increased. The patient stated that his stomach felt as though it were ballooned up with gas. He became pale but did not vomit. Four hours later while straining at stool he was suddenly seized with severe pain in the upper abdomen and fainted. During the next six hours the pain became increasingly more severe. When the patient's physician first saw him ten hours after the onset of the condition definite rigidity and tenderness were present over the upper half of both recta. A diagnosis of leaking gastric or duodenal ulcer was made.

At operation the abdomen was found filled with bright red fluid blood and a large solid cystic tumor was felt in the lesser sac fixed to the posterior wall. During manipulation the cyst ruptured and old blood was evacuated. Several large dilated venous channels were found in the cyst wall but no point of active bleeding could be discovered. The cyst hung by a thin pedicle from the posterior wall of the stomach 3, in below the lesser curvature and almost opposite the mid point of the latter.

Total removal of the tumor was impossible because of the dense adhesions to the posterior wall of the lesser sac.

Microscopic sections revealed characteristic leiomyomatous areas in the cyst wall with considerable hemorrhage throughout.

The case was particularly interesting because of the large amount of intra abdominal hemorrhage associated with the tumor.

STANLEY H. MINTZER M.D.

Dunlop D. M. Examination of the Gastric Contents as an Aid to the Diagnosis of Carcinoma of the Stomach. *Edinburgh M J* 1918 xxvi 497.

An analysis of the gastric contents was made in ninety three cases. In seventy five it was done by the fractional method in fifteen by Ewald's one-hour method and in three by examination of the resting juice. The results of the various tests are presented in tables. The author draws the following conclusions:

1 Gastric carcinoma may be diagnosed or excluded in the vast majority of cases by examination of the stomach contents alone

2 The significant findings in the diagnosis of this disease are the presence of achlorhydria, lactic acid, blood and evidences of stagnation

3 The absence of free acid and the presence of lactic acid are found in the majority of cases of gastric carcinoma and such a finding probably occurs in no other condition

4 The absence of lactic acid in gastric contents which show no free acid or the discovery of free hydrochloric acid in large quantities makes the presence of gastric carcinoma improbable

5 The absence of free acid and the presence of lactic acid may not be evidence of an advanced stage of carcinoma

6 Lactic acid found in the stomach is not invariably caused by the fermentation of the gastric contents. It may be sarcolactic acid produced by the tissues involved by the growth

7 The Congo red and dimethyl tests for free hydrochloric acid are not trustworthy as they do not indicate small quantities of free hydrochloric acid

8 When the agent is freshly prepared Gunzberg's test is a reliable indicator of the presence of free hydrochloric acid

9 Uffelmann's test for lactic acid is valueless as it reacts to many other substances in the gastric contents

10 MacLean's test for lactic acid is simple and trustworthy

J FRANK DOUGHERTY, M.D.

MacCarthy W. C. Early Cancer of the Stomach  
*J. Cancer Res. Arch.* 1928, XII, 1

Textbooks usually describe cancer of the stomach in its classical advanced stage, not in its earliest stages. Small gastric cancers are rarely seen at autopsy and during life do not give signs or symptoms by which they may be differentiated from chronic gastric ulcer, duodenal ulcer or sometimes gall bladder disease. In his experience with 33/4 gastric lesions the author has never seen a small cancer that was not in the border of a chronic ulcer.

Clinical experience with the stomach is similar to that with the breast. Twenty years ago chronic mastitis was thought to be related to mammary cancer. There are two possibilities. The chronic inflammatory condition may be a direct factor causing the cancer or the two conditions may be so closely associated and so often present together that it is frequently impossible to differentiate one from the other without biopsy. The first supposition may or may not be true. The second is true. Between 1900 and 1912 breasts removed by the surgeon showed malignant changes more frequently than they showed benign lesions. Since 1912 the benign lesions of the breast have outnumbered the malignant lesions. The clinical difficulties in diagnosing malignancy of the breast have increased 100 per cent. The size of mammary cancers is smaller the

relative number of cases with glandular involvement is smaller and the postoperative longevity is increased.

As it took time to perfect X-ray technique it was not until 1923 that benign lesions of the stomach were found to exceed the malignant lesions. By fluoroscopy it is now possible to locate even a small gastric ulcer but we cannot tell whether it is a simple ulcer or an ulcer showing early malignancy. Within eleven years 12.5 per cent of the patients with a diagnosis of early carcinoma in chronic gastric ulcers have died of carcinomatous recurrences but none of those with a diagnosis of secondary cytoplasia are known to be dead of cancer although 7.5 per cent of them are dead of unknown causes. Of all the chronic gastric ulcers resected or excised and studied at the Mayo Clinic in the last eleven years 9.7 per cent have shown either secondary cytoplasia alone or in combination with the stage called early carcinoma.

These facts do not show that cancer arises in gastric ulcers but they demonstrate that chronic gastric ulcer is the common site of our smallest cancers. Until we find some serological or other test for the earliest stages of cancer, early cancer of the stomach cannot be recognized without exploration and microscopic examination of chronic gastric ulcers.

Poate H. and Inglis K. Ganglioneuromatosis of the Alimentary Tract. *Brit. J. Surg.* 1928, XVI, 21

The authors report a case of ganglioneuromatosis of the alimentary tract in a man thirty years of age. The patient was admitted to the hospital complaining of flatulence, fullness and discomfort in the epigastrium and pain behind the right shoulder. There was a history of fullness and pain in the right side of the abdomen. The pain was worse when the patient was constipated. Constipation had developed over a period of two years.

Physical examination revealed nothing abnormal other than a peculiar fullness in the right side of the abdomen. There was no tenderness. Barium meal examinations of the stomach and duodenum showed signs of chronic duodenal ulcer. No further examination of the intestinal tract was made.

Operation revealed a chronic ulcer in the duodenum and a large soft mass distending the caecum and ascending colon. The mass was resected; a lateral anastomosis between the ileum and transverse colon was performed; the duodenal ulcer was oversewn and a posterior gastrojejunostomy was done. The patient made an uninterrupted recovery and when he was seen eighteen months later was free from symptom.

Gross examination of the external surface of the specimen which consisted of the terminal ileum, the appendix caecum and ascending colon showed no abnormality but when the specimen was opened two firm nodules about 1 cm. in diameter were found projecting 4 cm. into the lining of the ileum.

at a point 3 cm from the ileocecal junction. The nodules were covered by apparently intact mucous membrane. The appendix was uninvolved. The caecum contained two irregularly rounded tumor masses 4 and 15 cm respectively in diameter. Apart from these masses quite two-thirds of the wall of the caecum was diffusely thickened by neoplastic tissue averaging 1 cm from mucous to serous surfaces. The ascending colon contained the main growth which extended 20 cm up the colon and consisted of lobulated tumors involving about nine-tenths of this portion of the bowel. The three largest masses measured about 10 by 5 cm and projected from 3 to 4 cm into the lumen. The mucosa was apparently intact.

Microscopically the tumors consisted chiefly of fibrocellular tissue in which little resemblance to nerves could be detected. In places they were composed mainly of enlarged and abnormal nerve-trunks. They were situated within the circular muscle of the bowel in the region of Meissner's plexus. Some of the growth extended into the muscularis mucosae. Ganglion cells showing degenerative changes were present in large numbers. The mucous membrane showed a marked inflammatory reaction in which a large number of eosinophiles were conspicuous. The inclusion of adipose tissue in the growth was evident. The thickened walls of the vessels were either inflammatory or of neoplastic origin.

Roman and Arnold have suggested that the tumor is made up of nerve fiber cells of Schwann; the inference being that the tissue is epiblastic instead of mesoblastic in origin as has been previously believed.

The article contains a plate showing the gross specimen and five photomicrographs of paraffin sections stained with hematoxylin and eosin.

J EDWIN KILPATRICK M D

Warren R. Cancer of the Intestine. *Lancet* 1928 CCXV 493

This report is based on sixty-nine cases of cancer of the bowel excluding the rectum in which the diagnosis was verified at operation. The youngest patient was a boy fifteen years of age and the oldest a man of seventy-eight years. The site of the lesion was between the caecum and the hepatic flexure in twelve cases, in the transverse colon in four, in the splenic flexure or descending colon in twenty, and in the sigmoid in thirty-one.

One of the symptoms most suggestive of intestinal cancer is irregular action of the bowels of recent origin in a middle-aged or elderly person who previously has had normal bowel action.

In fifty-seven of the cases reported preliminary drainage by colostomy or lateral anastomosis was done. In the twelve others the operation was primary excision and anastomosis. The best site for a colostomy is the caecum. End-to-end anastomosis has given the author better results than the lateral method.

JOSEPH K. NAKAT M D

Slesinger E G. An Enteric Cyst of Large Size in a Boy. *Brit J Surg* 1928 xvi 333

The case reported was that of a boy seven years of age who had had attacks of gripping generalized abdominal pain associated with vomiting at intervals of about six months for four years. Under treatment with rest and starvation he recovered from these attacks in three or four days.

Examination revealed an abdominal tumor small to the left and below the umbilicus.

At operation the tumor was found to be an enteric cyst situated about 8 ft above the ileocecal valve. The intestine was resected with the mass and an end-to-end anastomosis was done. Good recovery followed.

The article contains a colored illustration of the resected intestine and attached cyst.

CARL R. STERNET, M D

Cutting R A. The Relative Mechanical Strength of Enterostomies Performed with and without Clamps. An Experimental Study. *Arch Surg* 1928 xvi 63

The author found that weight for weight the jejunum of the female dog is slightly stronger than that of the male dog.

The strength of enterostomies performed by both clamp and clampless techniques was about one-third that of normal intestine immediately after the enterostomy, then progressively decreased for three days, then rapidly and progressively increased up to or exceeding the strength of normal intestine by the tenth day, then suddenly fell again to about 50 per cent of the strength of the intact intestine on the eleventh day and again increased on the twelfth day.

Enterostomies performed by either method showed marked variations in strength on all post-operative days up to and including the twelfth day. Even though the operative technique was kept as constant as possible and postoperative care was the same in all cases, variations exceeding 100 per cent were noted frequently in the first three or four days and variations of from 50 to 75 per cent were common throughout the entire twelve days.

ARTHUR L. SUREFLER M D

Hurst A F and Stewart M J. Jejunal and Gastrojejunal Ulcers. I. Etiology and Pathology. II. Symptoms and Diagnosis. *Lancet* 1928 CCXV 742-805

The authors emphasize that jejunal ulcer is a frequent and dangerous sequel of gastrojejunostomy, particularly when the anastomosis is performed for duodenal ulcer. They are of the opinion that its incidence is much greater than is generally believed.

In a consecutive series of 10,300 autopsies performed at Leeds there were 131 cases in which gastrojejunostomy had been performed for a non-malignant lesion. In 46 cases in which death had occurred within ten days after the operation there was no gastrojejunal ulceration. Among 41 cases

in which death had occurred from ten days to two months after the operation there were 2 cases of acute jejunal ulceration and 1 case of acute gastro-jejunal ulceration. In 2 cases in which death had occurred two and six months respectively after the operation there was no secondary ulceration. Of 42 cases in which at least nine months had intervened between the operation and the patient's death jejunal or gastrojejunal ulcers were found in 52 per cent.

Regarding the recurrence of jejunal ulceration following conservative surgical procedures Hurst and Stewart state that this was found 4 times in 2 cases in the Leeds series and 8 times in 44 cases in the New Lodge series. The presence of free hydrochloric acid and infection (focal and local) are mentioned as factors concerned in the pathogenesis of these lesions.

In about 20 per cent of the cases the gastrojejunal or jejunal ulcer appears to develop immediately after the operation. The symptoms are similar to those of the original duodenal ulcer but the time of onset of the pain is more irregular and is generally earlier after meals. The pain is less completely relieved by food or sodium bicarbonate and is usually felt on a level with the umbilicus generally to the left of the midline. Vomiting is rare. Hemorrhage occurred in 21 of 43 cases of anastomotic ulcer. In only 1 of 22 autopsy cases was it the immediate cause of death. In 84 per cent of another series occult blood was found in the stools. Examination of the gastric contents in 38 cases showed hyperchlorhydria in one-third and high normal values in 40 per cent despite the gastrojejunostomy. While the majority of anastomotic ulcers are difficult to demonstrate roentgenographically it is frequently possible under the fluoroscope to palpate a point of tenderness strictly localized to the stoma or to some point within the first 4 in. of the efferent jejunal limb.

In conclusion the authors state that the possibility of jejunal ulceration should always be considered when symptoms develop after gastrojejunostomy. In the differential diagnosis the lesion must be distinguished from persistence or recurrence of a duodenal or gastric ulcer, chronic appendicitis, gall bladder disease and carcinoma supervening upon an unhealed gastric ulcer or originating at the stoma.

JACOB M. MORA, M.D.

Robertson W. E. Jejunocolic Fistula. *J Am M*  
121: 1028 xci 1259

The author states that up to 1924 the Mayo Clinic figures showed 6,214 gastro-enterostomies for both duodenal and gastric ulcer. In 83 (1.41 per cent) of the cases a marginal ulcer developed. Ten (11.36 per cent) of the 83 patients later developed a jejunocolic fistula. Therefore the incidence of jejunocolic fistula in a series of 6,214 gastro-enterostomies performed at the Mayo Clinic was 0.16 per cent and the incidence of marginal ulcer 1.41 per cent.

Gastrojejunal ulcer is always persistent and has a tendency to perforate hence its relation to the formation of fistulous tracts. Many marginal ulcers escape notice in general practice unless they give rise to fistula. Although improvement in the operative technique including the abandonment of non-absorbable suture material has materially lessened the incidence of marginal ulcer and therefore of gastrojejunal fistula it is wise to regard every case in which a gastro-enterostomy has been done as a potential case of marginal ulcer or fistula.

According to Moore and Marquis the causes of marginal ulcer are infection from the primary ulcer, some other intra-abdominal lesion or a distant focus of infection, trauma at operation, the use of non-absorbable suture material and persistent hyperchlorhydria. The ulcer is usually small and may be mucous penetrating or perforating. The most frequent complication is a fistulous opening into the colon. From the X-ray standpoint the indirect signs are gastric retention, enlargement of the stomach, hyperperistalsis, gastric spasticity and duodenal retention. The direct signs are deformity about the stoma, narrowing and irregularity of the jejunum, a scant flow through the opening and fixation at the site of the anastomosis.

Verbrugge distinguishes four stages in cases of fistula.

1. The development of the primary ulcer.
2. A period of relief following gastro-enterostomy. This ranges from one week to ten years but as a rule is from six months to a year. In the Mayo series the minimum was three weeks and the maximum ten and a half years.
3. A period of progress of the marginal ulcer. Fistula may develop without ulcer formation.
4. The fistula period ranging from two and a half months to twelve years. In the Mayo cases it ranged from nine months to five years and four months. Among the most common signs are diarrhea which is more or less sudden in onset and sometimes henteric. Loss of flesh is constant. Pain, nausea, foul eructations and vomiting are variable. For the majority of cases there is pain. Dehydration occurs when the condition has been present for some time. Apparent obstruction of the colon in a patient who has had a gastro-enterostomy should always suggest the possibility of fistula.

ANTHONY F. SAVA, M.D.

Bargen J. A. Ulcerative Colitis. *J Am M Ass*  
1928 xci 1176

The evidence at hand indicates that chronic ulcerative colitis is an infectious disease due to a diplostreptococcus of characteristic morphological and histological properties. That it is a definite disease entity is no longer open to question.

The author emphasizes the importance of a proctoscopic examination in all cases of rectal bleeding and of careful roentgenological investigation with a barium enema in suspected cases of ulceration of the colon since by such procedures the disease can be distin-



guided from other types of colonic ulceration and treatment can be instituted early with possible avoidance of some of the serious complications.

The treatment of chronic ulcerative colitis is of interest to all physicians. It requires patience and careful observation over periods of months. If the patient is not kept under constant surveillance he is apt to drift from one physician to another and may eventually consult a quack. The treatment should be primarily medical. Surgery should be limited to complications or used as a life saving measure in the case of patients who are failing progressively or whose condition shows no improvement after long continued medical treatment.

McKendrick J S Kerr J M M and Young A  
Discussion on Diverticulitis *Glasgow M J*  
1929 cx 193

McKENDRICK discusses diverticulitis from the general practitioner's point of view.

Diverticulosis with its terminal stage of diverticulitis is not an uncommon disease. Spriggs found diverticula present in 10 per cent of cases in which an X-ray examination of the intestines was made after a barium meal. In only 22 per cent of these cases were there signs of diverticulitis. When the Märtner method is employed 120 gm of barium sulphate are given in 600 ccm of buttermilk or malted milk and when for the enema from 400 to 450 gm of barium sulphate are used to a pt of warm buttermilk the solution finds its way easily through the neck of the diverticulum. Different parts of the sigmoid are viewed in profile by oblique and lateral views.

Diverticula develop chiefly in the descending colon and sigmoid. The diverticular state of the bowel is undoubtedly due to bacterial invasion of the intestinal wall. The primary focus of infection may be an apical abscess, spondylitis or a septic condition anywhere in the body. The streptococcus haemolyticus has been found in the faeces. The X-ray shows the colonic wall to be irregular in all or a part of its circumference. There is interference with haustration and segmentation and the bowel may become spastic. The irregularity due to weakening of the walls gradually gives rise to small hernial protrusions which at first are very minute and situated between the longitudinal bundles at the entrance and exit of the small blood vessels. These small pouch-like sacs or protrusions are true herniae. As the result of pressure or constipation the muscular walls of the diverticulum gradually disappear until the hernial sac is formed by only the mucosa and serosa. The diverticula are frequently present in the appendices epiploicae. They vary greatly in number. Their size varies according to the duration of the pathological condition. At first small they gradually enlarge from internal pressure until they resemble Meckel's diverticulum. The presence of these diverticula causes the condition known as diverticulosis. Faecal matter finds its way into the pouches and faecaliths are formed. Foreign

bodies have been found in the diverticula. Diverticulitis is preceded by the diverticular state and diverticulosis.

Certain pathological changes may take place in a fully developed diverticulum. In acute catarrhal condition often develops which may lead to the formation of adhesions to neighboring structures, gangrene and perforation resulting in general peritonitis. The formation of an abscess with adhesions to the bladder, ovaries or uterus or the formation of a fistula opening into these hollow viscera. Again, a more chronic condition may develop a peridiverticulitis leading to a palpable tumor mass on the left side and intestinal obstruction with general toxemia.

The disease is most common after the fiftieth year of age and occurs more frequently in men than in women. Most of the subjects are obese and constipated. In the prediverticular state there is often pain in the abdomen usually below the umbilicus and on the left side which is not relieved by drugs, recurs often and is associated with constipation and flatulence. Diverticulitis is characterized by constipation, pain in the left side, tenderness, rigidity of the rectus muscle, distention, frequent micturition, fever, leucocytosis and in the roentgenogram a typical irregular pulsade-like appearance of the sigmoid with pouches or crescents along the sides of the bowel. The feces rarely contain blood. After rupture the picture is that of peritonitis. The palpable tumor mass is frequently diagnosed as a carcinoma of the bowel.

In the treatment the mouth should be kept clean, the teeth attended to and all sources of infection removed. The diet should be of a lacto-vegetarian character consisting of malted milk and an abundance of mashed and sieved vegetables and fruits. The bowels should be kept open with paraffin oil. Massage of the abdomen is unsafe. A few ounces of olive oil injected each night into the lower bowel and a saline enema about every third day are beneficial. When signs of obstruction develop a cautious short circuiting operation or resection should be done.

KERR discusses the clinical manifestations of diverticulitis in women. He states that the condition is encountered in both an acute and a chronic form.

One of Kerr's first cases of diverticulitis was operated upon under the diagnosis of ovarian cyst. After opening the abdomen Kerr concluded that he was dealing with a malignant tumor of the bowel. The abdomen was therefore promptly closed and an unfavorable prognosis given. Several years later the patient's physician reported that the patient had entirely recovered from her pelvic discomfort and felt quite well. In another case Kerr resected the colon under the impression he was dealing with a carcinoma.

Kerr reports a case of infected diverticulum which produced chronic inflammation with thickening of the sigmoid and rectum simulating a mural giant tumor, a case of large perirectal effusion simulating

an ovarian tumor and a case of pelvic abscess due to diverticulitis.

In many cases of diverticulitis recovery results from bed rest regulation of the bowels and a suitable diet. In others surgical treatment is necessary. Surgical treatment is much simpler and safer in the female than in the male because in the female drainage can be established through the posterior vaginal fornix.

Young reports the case of a woman fifty three years of age who sought treatment because of symptoms of partial and increasing intestinal obstruction. Examination revealed a tumor in the lower part of the abdomen on the left side. A diagnosis of carcinomatous stricture of the sigmoid or pelvic colon was made. Operation revealed a large fixed mass involving the sigmoid loop and swollen appendices epiploicae. A colostomy was performed. Two years later the patient was quite well and had gained weight. Eleven years later she was still in good health.

Cases of intestinal diverticulosis are divided into the following groups:

Group 1. Cases of simple diverticulosis with little or no infection and no symptoms. As a rule this condition is overlooked entirely. A course of systematic colonic lavage will keep the pouches open and wash out the fecal impactions.

Group 2. Cases with a more advanced stage of the same pathological changes with infection supervening in the diverticula.

Group 3. Cases in which the infection has passed beyond the walls of the diverticula and a local or general peritonitis, pelvic abscess, salpingitis, fistula or abscesses may be present. The infection may spread retroperitoneally and cause a perinephritic abscess.

Group 4. Cases with progressive development of partial to complete intestinal obstruction with one or more large diverticula.

Group 5. Cases in which a diverticulum not only simulates a carcinoma of the sigmoid but may be the antecedent stage of cancer. In the opinion of the Mayos carcinoma develops in 25 per cent of cases of diverticulitis.

Masler reports that in a series of 500 autopsies diverticula were found in 34 cases and in practically every instance the site of the lesion was the sigmoid. Approximately 1 patient in 8 over forty five years of age had diverticulosis of the large bowel.

For X-ray examination Masler regards the barium enema as the method of choice.

JOHN W. NEWMAN, M.D.

Bargen, J. A. Chronic Ulcerative Colitis Associated with Malignant Disease. *Arch Surg* 1928 LVII 561.

The term chronic ulcerative colitis has come to mean a definite disease entity which presents characteristic clinical, pathological, proctoscopic and roentgenological changes.

The disease is a severe infection of the colon and carries with it serious complications and sequelae

such as polyposis, perforation, stricture, hemorrhage, perirectal fistula and abscess, arthritis and malignancy.

Of the patients with chronic ulcerative colitis who presented themselves at the Mayo Clinic in the period between 1916 and 1927 inclusive malignant disease was superimposed on the colitis in 20.

The paucity of reports in the literature on malignant disease of the colon developing in persons with chronic ulcerative colitis is noteworthy. Struthers emphasized the relationship of chronic ulcerative colitis and polyposis and suggested that malignant disease may follow these conditions. Hewitt and Howard made similar observations. Wheeler believes that polyposis occurs as a result of chronic ulcerative colitis. Helmholtz suggested that Virchow and Rokitsky may have described the terminal stage of chronic ulcerative colitis. Soper's work on multiple polyposis of the colon has been illuminating. At the Mayo Clinic the development of polyps has been noted proctoscopically in the course of progressing as well as healing chronic ulcerative colitis. Logan found polyps in 19 of 117 cases. Later the author noted them in 6 of 200 cases.

The various reports in the literature the frequency with which polyposis has occurred in the series of cases of chronic ulcerative colitis at the Mayo Clinic and the simultaneous occurrence of polyps and carcinoma in the diseased colon suggest that in some case of malignant disease of the colon the sequence is (1) chronic ulcerative colitis, (2) multiple polyposis and (3) malignant disease.

Malignant disease superimposed on chronic ulcerative colitis has a grave prognosis. Whenever a sudden change for the worse is noted, further proctoscopic and roentgenological investigations should be made. Operation yields discouraging results even if the malignant condition is discovered fairly early. Therefore medical treatment must be considered. The only hope it seems is preventive treatment that is the cure of the colitis and the removal of the polyps.

MacFarlane, J. A. Submucous Lipoma of the Colon. Report of a Case. *Arch Surg* 1928 LXII 6.

The author reports a case of submucous lipoma of the colon in which operation was performed following a diagnosis of carcinoma. The rarity of lipoma of the colon is evident from the fact that according to Moore only 6 cases were found in 44,654 operations performed at the Mayo Clinic. MacFarlane states that it is very difficult to make a diagnosis of lipoma or any other benign tumor of the large bowel previous to operation and that all tumors of the colon of the polyp variety should be regarded as malignant until they are proved benign.

ARTHUR L. SHREVE, M.D.

Koster, H. and Weinroth, M. The Blood Supply to the Appendix. *Arch Surg* 1928 LVII 577.

This article reports a study of the arteries of 100 human appendices, normal and pathological, which

were removed from persons in the first to seventh decades of life inclusive. The appendicular artery was injected with a barium sulphate gelatine suspension of known viscosity. The apparatus for making the injections is described in detail.

Macroscopic observations on the blood supply to the normal appendix show that the arterial tree is remarkably constant in its architecture. The blood supply is divided into two layers, the deeper being the richer. There is absence of a distinct blood supply to the mucosa. The appendicular branches of the second third and subsequent orders have a remarkable corkscrew and spiral character. The richness and profuse anastomosis of the blood supply of the appendix are striking.

Inflammations of the appendix are consistently paralleled by changes in the course and character of the blood vessels. When the pathological changes in the blood supply have progressed to vascular obliteration, complete return to normal is hardly to be expected.

JOHN W. NIXON, M.D.

Farr C. E. and Brakeley E. *Appendicitis in Children. An Analysis of Cases from St. Mary's Free Hospital for Children and the First Surgical (Cornell) Division of the New York Hospital.* *Surg. Clin. N. Am.* 1928 viii 1193.

Appendicitis is usually considered to be less frequent in children than in adults, but no doubt a large number of minor attacks in infants and young children are entirely overlooked or incorrectly diagnosed.

In the young a crippling of the appendix due to abnormality of its position and bands and kinks around the cecum not of inflammatory origin is relatively common. This condition should not be confused with chronic appendicitis due to definite inflammation of the appendix. In examinations of the appendix in children at operation and autopsy, a high incidence of serious involvement has been found. In many instances this involvement occurred with few or no clinical signs.

The diagnosis of appendicitis is more complicated in the cases of children than in those of adults because of the difficulty in the former of eliciting an accurate history. Appendicitis must be differentiated from simple colic, pyelitis, intussusception, cyclic vomiting, tuberculous peritonitis and retroperitoneal lymphadenitis. It is best to advise operation whenever there has been an attack at all suggestive of appendicitis.

The progress of appendicitis is very little more rapid in children than in adults. Examination of a small child or infant is best done while the patient is asleep.

In a review of 2 series of cases of appendicitis in children totaling nearly 900 cases the authors found that the condition occurred with about equal frequency in girls and boys. Acute appendicitis was most common at the fourteenth year of age and chronic appendicitis most common at the fifteenth year. The mortality was 5.9 per cent in one series

and 7.5 per cent in the other. All of the deaths were due to toxemia from spreading peritonitis. The average interval between the appearance of the symptoms and the operation in the 2 series was two and seven tenths and two days respectively. A mitis occurred in all except 3 cases. A cathartic had been given in very few instances.

In the acute cases the mortality depended chiefly upon (1) the severity of the attack, (2) the time at which operation was performed, and (3) whether or not a cathartic had been given.

In 1 series of cases the McBurney incision was used about twice as frequently as the right rectus incision and in the other series the right rectus incision was used about twice as frequently as the McBurney incision. The right rectus incision is to be preferred as it gives better exposure and allows more complete abdominal exploration.

Of the cases in which drainage was necessary in the first series, rubber dams and cigarette drains were used in 75 per cent. In the second series the Mikulicz type of drain was used most frequently.

Chronic cases made up 16 and 25 per cent respectively of the total number of cases in each series. In the chronic cases in the first series there was 1 death and in 10 per cent the appendix was normal. In the chronic cases in the second series there were no deaths and in 5 per cent the appendix was normal. In some of the cases in which macroscopic examination showed the appendix to be normal, there were adhesions, kinks or concretions which accounted for the symptoms. Complications were present in 23 per cent of the cases.

In approximately 65 per cent of the cases no perforation had occurred, yet in 27 per cent of these drainage was established.

Abscesses were found at operation in 12 per cent of the cases of the first series and 17 per cent of those of the second series. In the first series the mortality in the cases with abscess was 8 per cent and in the second series 2 per cent.

In the first series, spreading peritonitis developed in 18 per cent of the cases and was responsible for a mortality of 42 per cent. In the second series it developed in 16 per cent causing a mortality of 1 per cent.

In the first series the most common complications besides peritonitis and abscess formation were wound infection and pneumonia and in the second series wound infection and pelvic abscess.

The incidence of sequelae was about the same in both series. The chief sequelae were postoperative peritonitis.

CYRIL J. GLASPEL, M.D.

Bancroft F. W. *Acute Appendicitis with a Reference to the Advances in Treatment During the Last Ten Years and the Possible Progress for the Ensuing Ten Years.* *Surg. Clin. N. Am.* 1925 i 977.

Bancroft compared the mortality and complications of cases of acute appendicitis treated in 1917 and 1927 to determine what advances have been

made during the past ten years and what improvement we may expect in the mortality and morbidity statistics in the future.

The mortality was practically the same in the two series namely 4 per cent. It averaged 0.8 in cases without a peritoneal reaction and 7 per cent in cases with acute diffuse peritonitis.

The first advance made during the last ten years was a decrease in the incidence of postoperative hernia in cases in which drainage was established. This was accomplished by suturing the peritoneum about the drain and leaving the remainder of the wound wide open but loosely packed with gauze, a procedure which helps to prevent sloughing of the fascia. The formation of hernia is favored by poor musculature and lowered resistance.

The second advance was jejunostomy for mechanical or paralytic ileus.

The third important step was the intravenous or subcutaneous use of hypertonic saline solution for obstruction.

During the past ten years there has been no marked decrease of the mortality in cases of peritonitis or abscess.

For the reduction of the mortality it is necessary that physicians diagnose appendicitis early and refer cases immediately for operation. An expert anesthetist trained to induce either general or local anesthesia should always be at hand for emergency cases. A duodenal tube inserted through the nose into the stomach or duodenum at the time of operation will eliminate vomiting and peristalsis thus helping to control the spread of infection. Suprapubic drainage of the cul de sac through a small incision prolongs the operation very little and is of value especially in cases with pelvic collections. The use of hypertonic saline solution for ileus and repeated transfusions for sepsis will help the patient to overcome toxæmia.

The abdominal incision of choice is still disputed. The McBurney incision has the disadvantage that it does not afford a satisfactory exposure for difficult dissection unless the surgeon is fully acquainted with the various methods of extending the incision. The right rectus incision permits better exposure of the cæcum and appendix but frequently traumatizes the deep epigastric vessels, destroys the nerve supply of the rectus muscle and renders drainage faulty by allowing the tube to cross the terminal ileum. In the cases reviewed postoperative hernia was more common when the rectus incision was used than when the McBurney incision was employed. In general the McBurney incision is recommended.

When the appendiceal stump is inverted care should be taken to ligate a small vessel which travels along the cæcum to the base of the appendix thus preventing secondary bleeding into the bowel. If the cæcal wall is indurated no attempt at inversion should be made.

Cigarette drains are preferable to tubes as tubes are more rigid and seem more prone to create

necrosis with the formation of a fecal fistula. Two cigarette drains are used and one is removed at the end of twenty-four hours since after that length of time drainage will occur in the tract adjacent to the remaining drain.

After the operation the author's patients are placed in a high Fowler position and given tap water by rectum. If a duodenal tube is in place they are encouraged to drink water. The occurrence of vomiting when the duodenal tube is in place is evidence that the tube is occluded. During the first forty-eight hours the author gives enough morphine to abolish pain and diminish peristalsis.

CYRIL J. GLASPEL, M.D.

Moore A. B. Diseases Affecting the Distal Half of the Colon. *J. Am. Med. Ass.* 1928 45:1 1894.

Most diseases of the colon when advanced give rise to pronounced and diagnostic roentgenological signs. Early lesions are less emphatic in their manifestations less easily discovered and more difficult to distinguish from each other than equivalent lesions of the stomach. The stomach is comparatively small and can be inspected from every angle. It has definite motor activities which are altered by disease, and even minute deformities in its contour are usually significant of disease. On the other hand the colon is many feet in length and is difficult to study from different angles. It seldom evinces any definite motor phenomena during the period of examination and small irregularities of contour are likely to be meaningless. However some of these handicaps can be offset and the diagnosis of colonic disease made more efficient by active cooperation of the roentgenologist, proctologist and clinician.

Among the roentgenologically demonstrable diseases that affect the distal portion of the colon from the splenic flexure to the rectum the three most common are diverticulitis, cancer and ulcerative colitis. Of much less frequent occurrence are benign tumors, cicatricial strictures, tuberculosis and Hirschsprung's disease.

Diverticula occur in every part of the alimentary canal but are found most frequently in the colon especially in the distal half. They are found in approximately 5 per cent of all patients examined with the X-ray. In most cases the sacculations are few without symptoms and without clinical significance. Often especially in the sigmoid they are numerous and become inflamed—diverticulitis and peridiverticulitis. The inflammatory thickening produces a corresponding narrowing of the barium filled lumen of the bowel. The margin of the narrowed lumen is likely to be serrated and if a few diverticula which appear as round or oval shadows projecting from the lumen are also visible the diagnosis can readily be made. If no diverticular shadows are manifest the appearance may be difficult to distinguish from that of colonic spasm, cancer or adhesions.

Cancer is rather common in the distal colon. Its principal manifestations are a narrowing, deforming

defect in the barium shadow with or without obstruction to the enema. Scirrhus cancer often encircles the bowel producing the stenotic so called napkin ring form and is easily recognized. Medullary cancers grow rapidly ulcerate deeply and deform the lumen grossly. At the site of the defect a mass can usually be felt.

Chronic ulcerative colitis usually begins in the distal part of the bowel and progresses upward. When it is well advanced the affected bowel when filled with the barium enema is narrow, devoid of haustra and smooth and pipe like or deeply constricted at intervals so that it resembles a string of sausages. Frequently the colon is contracted longitudinally, the splenic flexure being thereby drawn downward.

**Kraske H. Operation for Cancer of the Rectum**  
(Zur Operation des Mastdarmkrebses) *Beitr*  
*Klin Chir* 1928 cxlii 408

The purpose of this article is to show that in suitable cases the sacral operation yields as good permanent results as the present day radical combined methods. The modification of the classical Kraske operation used at the Freiburg Clinic is as follows:

With the patient in the prone position a V shaped skin incision is made along the borders of the sacrum. When amputation is to be done the incision is extended downward toward the anus and the flap of skin and fat is turned upward. The coccyx and sacrum are then resected; the rectum is exposed, the abdominal cavity opened, the sacral cavity cleaned out and the rectum pulled down and resected as usual. Only when the proximal loop is short is it sutured circularly. Otherwise it is drawn through and after the operation is dilated with bougies. The peritoneum is closed only if the suturing can be done easily. Adhesions form so fast that there is little danger of peritonitis.

For from forty eight to seven two hours after the operation the wound is loosely packed with iodoform gauze. The skin suture is usually omitted as the flap falls easily into place. If the intestinal stump is short it is sutured into the left upper angle of the incision and later closed with bandages. If the stump is long an incision is made in the gluteus maximus at the level of the left posterior superior spine of the ischium; a speculum is passed through the muscle into the operative wound and the closed stump is drawn through the speculum so that it does not come into contact with the muscle and is then sutured to the skin.

After this operation there is absolute muscular closure in the standing position. In the sitting position the anus opens by the pressure of the body and spreading of the legs.

In a total of 500 cases of rectal carcinoma treated in this way at the Freiburg Clinic the operative mortality was 20 per cent. Recurrence developed in 45 per cent and a permanent cure resulted in 25 per cent.

WASSERTRUEDINGER (Z)

**LIVER, GALL BLADDER, PANCREAS  
AND SPLEEN**

**Wilkie A L. The Significance of Hepatitis in Relation to Cholecystitis. An Experimental Study**  
*Bull J Surg* 1924 xvi 274

In the experiments reported which were performed on rabbits the gall bladder was dissected from its liver bed separated from the liver by the interposition of omentum and fixed in its new position by a suture. In one group of animals the cystic duct was ligated to exclude all lymphatic and blood connections between the gall bladder and its bed, care being taken not to include the vessels. In another group the cystic duct was left intact. At the end of four months the animals which were used as controls showed no ill effects from this operation and when they were killed necropsy showed no definite pathological changes in their gall bladders.

In the experiments on the remaining animals prepared as described and on controls without separation of the gall bladder from its liver bed streptococci from human cystic lymph glands draining diseased gall bladders were injected in small numbers for six or seven weeks and the animals were killed at the end of four months.

In both groups of experimental animals—those with and those without ligation of the cystic duct—marked cholecystitis resulted but the liver substance remained normal.

In the controls without separation of the gall bladder from the liver the inoculation produced cholecystitis with marked hepatitis.

The author draws the following conclusions:

1. There is experimental evidence that the intramural gall bladder lesion in cholecystitis precedes the common liver changes in that disease.
2. The infecting organism probably reaches the gall bladder wall by way of the blood stream.

The article contains seven photomicrographs.

J EDWIN KIRKPATRICK, M D

**Diamond J S. The Value of Routine Estimations of Blood Bilirubin With a Report of 567 Cases Including a Group of Unrecognized Toxic Hepatitis**  
*Am J M Sc* 1929 13 (cxvi) 371

In the latent state of icterus before evidence of clinical jaundice has appeared most information is obtained from an estimation of the blood bilirubin. In a routine examination of chronic ambulatory patients with symptoms of digestive and nervous disturbances a group of twenty nine were found in whom hepatic derangement was indicated by a high blood bilirubin value corresponding to the latent stage of icterus. This condition represents a clinical entity which may be designated as hepatic toxemia the result of chronic hepatitis. It may possibly be regarded as the precursor of chronic hepatic cirrhosis. Thirty eight cases of cephalic and abdominal migraine were found to give high bilirubin readings in the latent stage pointing to hepatic dysfunction as a contributory factor to this disorder.

In the large group of cases of cholelithiasis and cholecystitis the test is of value only during the acute biliary attack when it serves to differentiate the attack from other types of abdominal colic including tabetic crises and angina pectoris

SAMUEL KAHN M D

Fulton W S and Sheppe W M Actinomycosis of the Liver *Virginia M Month* 1928 iv 443

The authors state that so called primary actinomycosis of the liver is rare Its incidence in the United States is estimated at less than 0.7 per cent

This article reports a case of isolated actinomycosis of the liver in a white woman thirty four years of age who gave a history of attacks of epigastric pain occurring over a period of two and a half years The pain was associated with belching and flatulence and was followed by deep jaundice Removal of the appendix had failed to give relief At one time the gums were greatly swollen for three weeks following the extraction of a tooth The patient had lost 65 lbs and the gastro intestinal symptoms had become progressively worse

Examination revealed an indefinite mass in the epigastrium and enlargement of the liver Laboratory tests showed a secondary anemia and a leucocytosis of 13,800 but were otherwise negative

Exploration revealed a large liver with a solid grayish yellow mass the size of an orange in the middle lobe Sections of the tumor mass showed numerous small yellowish gray nodules of pinhead size sharply demarcated from the surrounding liver substance which were filled with polymorphonuclears and characteristic actinomycotic organisms

The patient made an uneventful recovery and was discharged on the eighteenth day after the operation following thorough potassium iodide and deep X ray therapy

This case is cited as supporting the theory that infection enters by way of the gastro intestinal tract and reaches the liver by way of the portal vein

STANLEY H MENTZER M D

Boyden E A An Analysis of the Reaction of the Human Gall Bladder to Food *Anat Rec* 1933 xl 147

A study of the reactions of the gall bladders of twenty four normal persons to a standardized fatty meal is reported Cholecystograms were made (1) during the fasting state (2) two four eight twelve and sixteen minutes after an egg yolk cream meal and (3) every five minutes for an hour or more thereafter

Fifteen hours after the oral administration of the dye the gall bladders of the fasting subjects were not quiescent but either tilting or contracting Psychic stimuli such as the sight or smell of food caused their quick evacuation

Following the inhibition of the fatty meal there was a very short latent period of contraction Within two minutes after the food entered the mouth the gall bladder showed a marked diminution of volume

This probably corresponds to the latent period of one minute after the entrance of egg yolk into the duodenum which was established by McMaster and Elman in experiments on dogs The initial diminution in the volume of the human gall bladder is greater during the first two minutes than in any subsequent two minutes averaging 5 r c cm

Following the first two minutes of activity in the average case there was a two-minute pause preceding the principal period of discharge which averaged thirty two minutes During the period of principal discharge the gall bladder was reduced approximately three fourths of its volume Therefore during the first part of a meal a large amount of concentrated bile is poured into the duodenum and there is a consequent increase in the flow of pancreatic juice This observation alone is sufficient to prove that the human gall bladder is a storage organ directly related to the process of digestion

Following the first phase of contraction the gall bladder is generally quiescent for a short period varying from five to forty five minutes Then comes the second phase of contraction frequently followed by several alternating periods of relaxation and contraction until eventually the organ is emptied The rate of emptying varies greatly in different persons and is twice as rapid in females as in males It has no relation to the motility of the stomach or intestine

With regard to the regulatory action of the sphincter mechanism at the outlet of the common duct the author concludes that the resistance of the sphincter drops simultaneously with the ingestion of food Approximately one minute later the gall bladder begins to contract About two minutes after the ingestion of food the resistance offered by the sphincter suddenly increases until it is greater than the force exerted by the gall bladder Subsequent phases of contraction are accounted for by intermittent spurts of food (egg yolk) from the stomach Following each phase of contraction there is immediate filling of the gall bladder

When hot bacon was thrust before the noses of eleven fasting students it was found that eight of them discharged an average of 4.2 c cm of bile from the gall bladder during the first two minutes of smelling The inhibition of cold water caused an expulsion of bile from the gall bladder almost twice the amount observed during the smelling tests When the duodenum was distended with air through a Rehfuess tube two of the four subjects showed a discharge of bile almost the same as that occurring in the first two minutes after the administration of egg yolk

STANLEY H MENTZER M D

Held I W Roentgen Diagnosis of Gall Bladder Disease *Surg Clin N Y* 1928 viii 1223

The author reviews in detail the various methods in use today in the study of the gall bladder by means of the roentgen ray

Cholecystography as introduced by Graham Cole and Copher is given consideration as regards

its development the technique of its application and its value not only as a diagnostic method but as a means of clearing up important physiological problems in connection with the gall bladder. Studies in which this method was used to show the effect of drugs, foods and other factors on the secretion and excretion of bile are described briefly. From the diagnostic standpoint the procedure has yielded important information relative to the variable position of the gall bladder, its size, shape and mobility, its relationship to parts of the stomach, the duodenum or shadows of doubtful origin, its function as evidenced by the concentrating effect of its mucosa and the emptying of its contents and the visualization of radiolucent stones within it. Although absence of a gall bladder shadow after the administration of the dye usually indicates a pathological condition and the presence of a normal shadow speaks against such a condition, these findings are not absolute.

Gall bladder study without dye yields positive results in a variable number of cases depending largely upon the skill and care of the examiner. Different roentgenologists have reported that they have been able to diagnose from 5 to 90 per cent of gall stones by the ordinary examination. George and Leonard have maintained that pathological changes in the walls of the gall bladder may render the organ visible in the ordinary film and that when the gall bladder is thus visualized it is pathological.

Another method used in the roentgen diagnosis of gall bladder disease is the so-called indirect method which has as its object the demonstration of functional reflex disturbances of parts of the gastrointestinal tract and changes resulting from adhesions. Thus various types of spastic contractions of the stomach, gastric retention without an organic basis, persistent gas distention of the hepatic flexure and distortion of parts of the stomach, duodenum or colon have all been found in association.

In conclusion the author states that roentgen ray study has proved to be an invaluable aid in the diagnosis of gall bladder disease. The direct and indirect method should be employed. The object of the direct method is to visualize the gall bladder proper. This is accomplished by taking films of the gall bladder region with and without the administration of the dye. The method of Graham (cholecystography) is by far the most valuable. This procedure permits a study of the function of the gall bladder and makes it possible also to visualize cholesterinized stones in a large percentage of cases. It shows with a high degree of exactness whether or not the shadows in the right hypochondrium belong to the gall bladder. The non-visualization of the gall bladder after the administration of the dye is particularly valuable as it indicates a disease condition.

The oral administration of the dye is very reliable and promises to replace the intravenous method entirely.

ADOLPH HARTUNG M D

**Baggio G.** Cholecystectomy for Calculosis After Passage of the Stone. (*Una colecistectomia per calcolosi a calcolo emesso*). *Pol. d. n. Rome* 19 5, XXXV sez. prat. 1537

The patient whose case is reported was a woman twenty-eight years old. In September 1906 she had an infection which was believed to be paratyphoid and lasted for two weeks. During this time she had a typical attack of gall stone colic. Similar attacks occurred in October and November and one attack in March 1927. The attacks then became less frequent but more severe and were accompanied by icterus and the appearance of bile pigment in the urine.

The author first saw the patient in May 1907 when she was having severe attacks every few days. Internists who had examined her had made a diagnosis of cholecystitis. Roentgenological examination had failed to reveal any shadows of stones but a gall stone was found in the feces in an examination made in an interval between attacks.

Cholecystectomy was performed during a period of complete remission from pain and fever when there was no bile pigment in the urine. Examination of the gall bladder was negative for stones and bacteria. The author concluded that if the inflammation had been caused by the paratyphoid bacteria the microorganisms had probably become enclosed in the calculus and destroyed. The abdomen was closed without drainage. Uneventful recovery resulted.

In discussing the advisability of cholecystectomy under the circumstances present in this case Baggio states that he believes the operation was justified as the patient has had no further attacks of colic.

ADAM G. MORGAN M D

**Ibarz P. L.** Cancer of the Gall Bladder (Cancer de la vesícula biliar). *An. Fac. de med. Univ. de Blen*. *Leideo* 1928 III 177

This is a report of cancer of the gall bladder in three women of from sixty-five to seventy years of age. In two of the cases there was no history of gall stones or jaundice but malignancy was indicated by loss of weight, anorexia and digestive disorders. The gall bladder was united to the colon and omentum by very dense adhesions. In the third case gall stones and cancer were both present. The gall bladder was free and tense and was distended with bile and stones.

The tumors were of an infiltrating type. They did not invade the peritoneal coats but filled the gall bladder cavity with tumor mass and were adherent to the liver fossa. Metastases to the liver could not be found.

Microscopic examination showed one tumor to be an adenocarcinoma with cylindrical cells and papillary formations. Another was composed of cylindrical tubular and pavement epithelial cells with pearl formations. The third was a papillary epithelioma composed of well formed typical cells which secreted mucus.

WILLIAM R. MEYER M D

- Erdmann J F Surgery of the Gall Bladder  
*New England J Med* 1928 cxciv 703
- Lahey F H Surgery of the Bile Ducts  
*England J Med* 1928 cxciv 707
- Judd E S Sequelae and Accidents of Biliary  
 Surgery *New England J Med* 1928 cxciv 712
- Jones D F The Relation between Gall Bladder  
 Disease and Pancreatitis *New England J Med*  
 1928 cxciv 716
- White F W Some Medical Aspects of the Dis-  
 eases of the Gall Bladder and Bile Passages  
*New England J Med* 1928 cxciv 719

ERDMANN states that he performs cholecystostomy only in cases of suspected carcinoma or some other condition definitely obstructing the flow of bile. If cholecystostomy is to be efficacious under such conditions the obstruction must be below the cystic and hepatic ducts.

In acute cholecystitis Erdmann rarely performs cholecystostomy, the usual procedure being cholecystectomy. For cases of obstruction below the cystic duct whether due to carcinoma or pancreatitis he prefers cholecystogastrostomy to cholecystostomy.

To show the harmlessness of bile in contact with the peritoneum the case of a woman who developed an enormous accumulation of bile in the peritoneal cavity after a cholecystectomy is reported. This observation is one of the reasons why Erdmann usually closes the abdomen without drainage after removal of the gall bladder. He has noted that deaths following operations on the biliary system are due to pneumonia or renal or cardiac complications rather than to peritonitis.

In conclusion Erdmann states that the occasional operator should perform the operation with which he is most familiar and which when performed by him has the lowest mortality rate.

LAHEY states that of 83 operations performed in his clinic for disease of the biliary tract 158 (19 per cent) were performed on the bile ducts. He has come to the following conclusions:

- 1 Common duct stones frequently exist in the complete absence of symptoms.
  - 2 Gall bladder colic may occur with jaundice and symptoms strongly suggesting the presence of stones in the common duct when no such stones can be found.
  - 3 Infection in the common and hepatic ducts may be unassociated with gall stones and may produce symptoms and signs similar to those of common duct and hepatic duct stones.
  - 4 Common duct stones may be present without jaundice or clay-colored stools and may be associated with such mild symptoms of biliary colic that only the suspicion of stones in the gall bladder arises in the mind of the examiner.
  - 5 Therefore in many cases of gall stone colic the surgeon must guard against a tendency to be satisfied solely with removal of the gall bladder and its contained stones.
- For drainage of the common and hepatic ducts Lahey uses T tubes of smaller caliber than the duct

itself. In order to prevent pressure necrosis and the formation of a duodenal fistula care is taken that these tubes do not lie behind the duodenum. In cases with merely mechanical blocking of the duct by a stone unassociated with infection the T tube is removed on the tenth or twelfth day but in cases in which there is infection or a reconstruction of the duct has been done it is left in place for from two to three months. In cases of complete severance of the duct in which suture of the cut end of the duct to the duodenum is impossible the best procedure is the formation of a complete external biliary fistula followed at the end of three months or more by dissection of this canal to the bed of the liver and its implantation into the duodenum stomach or jejunum. For cases of obstruction due to malignancy in either the pancreas or the ducts Lahey advises cholecystenterostomy. In the preliminary treatment of patients with jaundice he gives calcium lactate by mouth and calcium chloride by vein and transfusion. Glucose is administered to maintain the glycogen reserve of the liver. Most of Lahey's operations have been performed under high spinal anesthesia.

JUDD states that after operations on the gall bladder it is not uncommon for certain symptoms to persist. Such symptoms have been attributed to the passing of a mucus plug through the duct. In some instances however they are undoubtedly due to cholangitis, hepatitis or pancreatitis. The patient can usually be assured that the difficulty will not continue.

Judd discusses non calculous intermittent biliary obstruction and reports 28 cases. Following cholecystectomy the chief complaint in all was severe colic. At a second operation considerable dilatation of the common duct was found in every instance. The best results were obtained when prolonged drainage of the bile was established at this time. Judd believes that the causes of the symptoms were biliary obstruction and inflammation of the pancreas and liver.

Fistulae following operations on the biliary tract may be of the mucous or the biliary type. Before an attempt is made to repair a fistula the function of the liver should be carefully investigated.

In the author's opinion injury to the ducts during the course of an operation on the biliary tract is usually due to insufficient exposure of the field of operation. Attention is called to the fact that not all strictures of the common bile duct are due to injury; some of them are the result of obliterative cholangitis.

JONES states that the frequency of association of gall bladder disease and pancreatitis has been estimated at between 20 and 50 per cent. The relation of gall bladder disease to pancreatitis has been ascribed to (1) the retrojection of bile or duodenal contents into the pancreatic duct and (2) infection of the pancreas from the gall bladder through the lymphatics.

There appear to be two entirely different types of pancreatitis: (1) acute hemorrhagic pancreatitis in



which there may or may not be co existing gall bladder disease and ( ) chronic inflammation usually occurring in the head of the pancreas following previous attacks of gall stone colic or cholecystitis

In the first type microscopic examination shows necrosis of the parenchyma and in the second type inflammation of the interstitial tissue. Acute hemorrhagic pancreatitis may be caused by a gall stone at the papilla of Vater or spasm of the sphincter of Oddi allowing the entrance of bile into the pancreatic ducts

The theory of lymphatic infection of the pancreas from a chronic gall bladder infection is not well supported by experimental evidence and seems to be disproved by certain clinical evidence

Jones believes that gall stones should be removed with the gall bladder if there are no contra indications. He is of the opinion that there is no clinical evidence whatever to prove that the so-called chronic cholecystitis and the cholesterol gall bladder have any causative relationship to acute hemorrhagic pancreatitis

For the treatment of acute pancreatitis Jones advises incision of the capsule of the pancreas and drainage. For chronic pancreatitis he recommends the removal of all sources of infection and drainage of the biliary system for a period of at least two weeks

WHITE reviews the known facts relative to the physiology and pathology of the gall bladder region and calls attention to the importance of stasis and infection and changes in metabolism in gall bladder disease. He states that what was formerly known as the strawberry gall bladder is now called the cholesterol gall bladder. He stresses the importance of a carefully taken history and physical examination and the Graham test in the diagnosis of gall bladder conditions. He divides cases of biliary tract disease into three groups: those with typical colic; those with local soreness; and those with vague indigestion without local symptoms. In cases with jaundice the icterus index and van den Bergh test are important.

The treatment of disease of the biliary tract should include regulation of the diet, weight reduction, regular exercise, the use of various spring waters, the elimination of focal infections, and reduction of the cholesterol intake. Surgery should be based on symptoms and not on the presence of stones and low grade infection. The duties of the physician in cases of biliary disease are to make a diagnosis, to send to the surgeon the cases of gall stones with symptoms, to give medical treatment in some of the mild early uncomplicated or poor risk cases of cholecystitis, and to prevent delay of necessary operation.

JOHN H. GARLOCK, M.D.

Ladd, W. E. Congenital Atresia and Stenosis of the Bile Ducts. *J Am Med Ass* 1938; 10: 1082

Approximately 170 cases of congenital atresia and stenosis of the bile ducts have been reported to date.

The author adds 20 cases, 11 of which were treated surgically.

These abnormalities have been attributed to congenital syphilis, fetal peritonitis, catarrhal cholangitis, and congenital malformations. The author believes that congenital malformations are most often responsible and that Alpp's theory of embryonic epithelial concrescence of the mucosa of the ducts best explains the lesions.

The 20 cases reported by Ladd included 5 cases in which all of the ducts (common hepatic and cystic) were represented by fibrous cords, 3 cases of obliteration of the common duct, 3 cases of partial obliteration of the common duct with dilatation of all of the ducts and of the gall bladder, 1 case in which a moderately sized gall bladder had no connection with the common and hepatic ducts, and 4 cases of partial obliteration of all of the ducts with obstruction due to inspissated bile or cell debris. The 4 other cases were grouped in the autopsy records as cases of congenital obliteration, but the sites of the lesions were not definitely stated.

Of the 11 patients who were operated upon 6 recovered. Cholecystoduodenostomy is the operation of choice when it is possible. This operation was done in 2 cases with good results. Occasionally simple probing or dilatation of the ducts is sufficient. The insertion of a catheter through the gall bladder and the cystic and common ducts into the duodenum is a good procedure. Cholecystogastrostomy proved satisfactory in the single case in which it was done.

The author believes congenital atresia and stenosis of the bile ducts is not as hopeless as it was formerly considered and advises early exploration in the case of every infant in which the condition is suspected.

STANLEY H. METZGER, M.D.

Tammann, Studies on Biliary Fistulae (Ueber Stuhlen an Gallenleitern). *Zentr. abh. f. Chir.* 1938, 1v, 811.

Tammann reports his researches on dogs in which a biliary fistula was established after ligation of the common bile duct by connecting the gall bladder and the urinary bladder by a tube. Anemia developed with great regularity, the erythrocytes and the hemoglobin sank to two thirds their original values. Except for the postoperative leucocytosis the white blood picture was unchanged. Histological examination revealed a pronounced hemosiderosis of the spleen and the abdominal lymph glands (storage of the hemoglobin iron in the depots of the reticulo-endothelial system, not excretion corresponding to the grade of the anemia). The fact that in several dogs the bile fistula anemia assumed a progressive character after splenectomy suggests the presence of a regulatory mechanism in the reticulo-endothelial system.

Investigations as to what constituents of the bile are responsible for the occurrence of bile fistula anemia showed that feeding with ox gall will bring about retrogression in an already manifest bile fistula anemia or if it is begun immediately after

the establishment of the biliary fistula will prevent the appearance of the anemia. Bilirubin and leucins were without effect on the bile fistula anemia, but bile acids (sodium taurocholate or sodium glycocholate) and activated ergosterin (Vitamin D) had a very distinct effect. Especially when ergosterin was employed unusually large numbers of young erythrocytes with substantia granulofilamentosa appeared. Ergosterin therefore seems to be a very active stimulant of the hematopoietic function of the bone marrow and might prove to be of therapeutic value in pernicious anemia. Cholesterol on the other hand increased the anemia (increased blood destruction).

Since a porotic osteomalacia develops after a few weeks in dogs with a biliary fistula (Recklinghausen, Dieterich), it seems logical to assume as the cause a disturbance of absorption of the fat soluble Vitamin D from absence of bile in the intestine (Mueller and Seifert). Dogs with already developed osteomalacia due to a biliary fistula were treated with Vitamin D and in other dogs the treatment with Vitamin D was begun immediately after the formation of the biliary fistula. Since Vitamin D (ergosterin) had not been isolated at that time a 3 per cent solution of activated cholesterol was used. Every second day a subcutaneous injection of 0.01 mgm. of activated cholesterol was given. The results were judged by morphological examination, chemical analysis of the bone and comparison of the regenerative capacity of the bone in surgically produced defects. It was found that Vitamin D has a very distinct effect on osteomalacia due to a biliary fistula even when the osteomalacia was already manifest. Vitamin D was able to exert a favorable influence.

DEMENT (7)

**Taylor J. Cystic Dilatation of the Common Bile Duct. Record of an Example.** *Brit J Surg* 1928 xvi 337

Taylor states that the case reported in this article was apparently the first of its kind to be recognized before operation and successfully treated surgically.

The patient was a woman twenty three years of age. Since very early childhood she had had attacks of pain in the upper part of the abdomen which radiated to the back but not to the shoulder. The pain was accompanied by continuous vomiting and followed by jaundice. During several attacks which occurred while the patient was under observation in the hospital a mass the size of a tennis ball could be felt under the right costal margin. These attacks were accompanied by chills and fever and steadily became worse in the course of a few weeks.

Operation revealed a slightly enlarged gall bladder with a short distended cystic duct which emptied into a dilatation of the common duct about the size of a tangerine orange extending from the juncture of the cystic duct to the second part of the duodenum.

The gall bladder was sutured to the stomach in a cholecystogastrostomy and the abdomen closed with drainage. From the aspirated gall bladder contents a pure culture of bacillus coli was obtained.

Bile drained freely from the wound until five weeks after the operation when the patient was dismissed from the hospital. Three and a half months later she was well.

STANLEY H. MINTZER, M.D.

**Finney J. M. T. and Finney J. M. F. Jr. Resection of the Pancreas.** *Ann Surg* 1918 lxxviii 584

The authors report a case of persistent marked hypoglycemia associated with attacks suggesting insulin shock or hysteria in which massive resection of the pancreas was done to reduce the number and output of the islands of Langerhans.

The improvement which resulted shows that the removal of large portions of pancreas is comparatively safe.

SAMUEL KAHN, M.D.

**Hitzrot J. M. An Unclassified Type of Splenomegaly in Children.** *Ann Surg* 1928 lxxviii 361

Enlargements of the spleen in children are not common but bear a close resemblance to the splenomegalies found in adults.

The author reports four unusual cases of splenomegaly with anemia in children giving the complete case history in each instance. The outstanding feature of these four cases was a shower of nucleated red cells which appeared immediately after splenectomy. In one case the nucleated red cells persisted for fourteen years after the splenectomy, the ratio remaining 5:1 in the differential blood count. In the three other cases they remained for eight, six and two years respectively, the nucleated red being from five to eight times more numerous than the nucleated whites.

Nucleated red cells were not present following splenectomy in the other splenomegalies that the author has studied or at least were not present in such large numbers. The presence of numerous nucleated red cells in cases resembling atypical von Jaksch's disease and atypical hemolytic jaundice has been reported, but the number was not so large as that found by the author (220,000 per cubic millimeter).

Another interesting feature of the author's four cases was the onset of the disease in the second year of life with the appearance of a curious tint to the skin, bluish white sclerae, vomiting, loss of appetite and weakness.

A third feature of note was the lack of growth and development. Shortly after the splenectomy the children began to grow normally and to develop mental traits characteristic of their ages.

The pathologist reported that the structural changes in the spleen were relatively slight and not characteristic of any definite clinical condition.

STANLEY H. MINTZER, M.D.

Whipple A O Reeves R J and Cobb C C A  
Typical Hemolytic Anæmia with Spleno-  
megaly in Children *Ann Surg* 1928 lxxviii  
380

The splenomegalies associated with anæmia occurring in children are especially difficult to classify. The one common factor is the apparent dysfunction of the reticulo-endothelial cells.

In some instances this dysfunction is localized in the spleen as in chronic hemolytic icterus and splenectomy is apparently curative. In others the reticulo-endothelial disturbance often appears in the liver lymph nodes or bones as well as in the spleen. In such cases splenectomy may be successful. Thrombopæmic purpura belongs in this group. In still another group of cases represented by the Gaucher type of splenomegaly the abnormal cells are found in all four sites but are most numerous in the spleen. These variations in type and degree may account for the difficulty encountered in classifying the splenomegalies with anæmia in children.

The authors add two cases to the seven previously reported by other observers in which splenomegaly, anæmia and jaundice in children was accompanied by peculiar bone changes and atypical cells of the Gaucher type in the spleen. The bone changes were especially marked in the skull and long bones. The former showed thinning of the inner and outer tables with great thickening of the diploe particularly in the frontal and occipital bones. The long bones presented a streaky appearance due to transverse lines of calcium occurring in generally decalcified bones. The bone changes occurred very early especially in the parietal and frontal regions where the cortex was expanded giving the child a mongolian facies. The spleen showed general fibrosis especially in the capsule and trabeculae and peculiar vacuolated cells of the Gaucher type scattered in the splenic pulp. The authors believe these cells were atypical or abnormal reticulo-endothelial cells.

STANLEY H MENTZER M D

Deaver J B and Reimann S P Splenic En-  
largement with Cirrhosis of the Liver *Ann*  
*Surg* 1928 lxxviii 355

Well selected early cases of Banti's disease are cured by splenectomy and late cases are sometimes materially benefited by this operation. The authors report a late case.

The spleen is not necessary for life except possibly in certain emergencies when its reservoir of blood is needed. When necessary it can produce red blood cells as well as destroy them. It stores iron and is concerned in the formation of bilirubin from hæmatoidin. It has something to do with antibody formation. Its relation to the entire reticulo-endothelial system is shown by the reticulo-endothelial structures after splenectomy.

The etiology of diseases apparently beginning in the spleen exclusive of tumors is unknown. Such conditions are characterized by splenomegaly a moderate secondary type of anæmia and a group of

more or less constant symptoms such as hæmorrhages jaundice loss of strength and weight and cirrhosis of the liver. The marked variations in the symptoms make it difficult to believe that we are dealing with a uniform condition yet so far as treatment is concerned it is perhaps better to consider this to be the case.

Banti's disease is a distinct entity. It has the characteristics of a primary splenic disease. It is probably best to consider it due to toxic or poorly defined infectious substances formed in the spleen and leading to fibrosis of that organ inhibition of the bone marrow and secondary cirrhosis of the liver.

In all cases of splenomegaly the authors first search for a cause of the splenic enlargement. If no cause can be found the splenomegaly is diagnosed as the primary condition. Splenectomy is then considered. Transfusion is performed if the hæmoglobin is below 50 per cent. Unless the spleen is enormously enlarged the pedicle can be reached anteriorly after the stomach has been drawn well to the right and the gastro-splenic omentum has been divided. Any adhesions present are separated and the spleno-phrenic fold of the peritoneum is divided. The spleen is then turned over so that the vessels may be seen in the pedicle. The vessels are cut with care not to injure the tail of the pancreas. Venous oozing is controlled by hot packs after the important vessels have been individually isolated and tied. After the bleeding has been controlled the abdominal wall is closed without the introduction of a drain.

STANLEY H MENTZER M D

## MISCELLANEOUS

Moody R O and Van Nuss R G Some Results  
of a Study of Roentgenograms of the Abdom-  
inal viscera *Am J Roent* 1928 xi 348

The authors report the results of a roentgenological study of the normal form position and topography of the liver and spleen in 600 healthy male and 600 healthy female students. Most of the roentgenograms were taken with the subject erect, in the anatomical position but several hundred were taken with the subject erect and prone and a smaller number with the subject erect and supine. The target was usually centered on the intertubercular line a line drawn between the highest points of the thoracic crests but when roentgenograms were taken to show the effects of exercise and of blood transfusion on the size of the spleen it was centered over the spleen. With the subjects in the anatomical position the target film distance was 90 cm. With the subjects prone and supine a Bucky diaphragm was used and the target film distance was 72.5 cm. The results are shown in tables and illustrations. The following conclusions are drawn.

Long livers having their lower tip in the pelvic cavity as much as 50 cm. below the intertubercular line are normal.

Sex is a factor affecting the length of the liver. More men than women have long livers.

A roentgenographic norm has been established for the size of the spleen in healthy young adults.

The lower border of the spleen is most commonly found opposite the upper half of the third lumbar vertebra.

Long spleens having their lower border on a level with the lower half of the fourth lumbar vertebra are normal. These long spleens are found in persons with no history of malaria.

Sex is a factor affecting the length and the shadow width of the spleen. More men than women have long spleens and more men than women have a wide spleen shadow.

There is strong evidence that in human beings the spleen is considerably larger in the living than in the dead.

There is some evidence that exercise and the loss of blood given for transfusion decreases the size of the spleen in man. **ADOLPH HARTUNG M D**

Hunter W E. *Diaphragmatic Hernia. California & West Med.* 1928 XLIV 227

Hunter describes three types of diaphragmatic hernia and suggests the following classification:

1. Congenital hernia:

- A. False hernia without a sac (from 80 to 90 per cent of reported cases)
- B. True hernia with a sac (from 10 to 10 per cent of reported cases)

2. Acquired hernia:

- A. Hernia which develop through congenitally weak areas in the diaphragm. These weak spots may be caused by (1) defective development of the diaphragm, (2) disease within the diaphragm itself or secondary to an abscess above or below the diaphragm or (3) blows which injure the musculature; the hernia occurs immediately or at a much later period.
- B. Blows which tear the diaphragm from its attachment to the chest wall. This condition is not a hernia but an evisceration or evulsion of the diaphragm.

3. Eventration. This is not hernia but a relaxation or weakness of one side of the diaphragm. In the ten cases which have been reported in the literature, it occurred on the right side.

- A. Congenital
- B. Acquired

Eventration may result from (1) immature development of the lungs which leaves the diaphragm

high (2) developmental injury to the phrenic nerve causing relaxation or (3) improper development of the musculature of the diaphragm. The condition is often associated with other developmental defects.

Diaphragmatic hernia is more common than is generally believed and is often overlooked by the physician or surgeon. The diagnosis is usually made by the roentgenologist or at autopsy.

**HERMAN H. HUBER M D**

Giles R. G. *Diaphragmatic Hernia. With a Report of Cases. Texas State J. Med.* 1928 XLIV 418

Diaphragmatic hernia is diagnosed more frequently since the use of the X-ray. There are two main varieties: the congenital and the acquired. The congenital is due to a defect in the development of the diaphragm while the acquired is due to trauma. The former is usually present at birth. The latter may develop immediately after an injury or not until months or even years later.

Both types occur most frequently on the left side. A large percentage of acquired hernia follow stab wounds of the chest.

The signs and symptoms of diaphragmatic hernia are not pathognomonic. They depend largely upon the size of the opening in the diaphragm, the degree of constriction and the organs involved. The subjective symptoms range from vague discomfort to symptoms suggesting gall bladder disease or ulcer. In some cases there is interference with gastric function. There may be also interference with respiration.

The most constant symptoms are pain in the epigastrium immediately after eating, paroxysms of smothering without apparent cause and vomiting without premonition.

X-ray examination is practically always necessary to establish the diagnosis. At times even the roentgen findings may lead to erroneous conclusions as temporary spontaneous reduction may occur. The examination then being negative, double diaphragmatic hernia may exist and only one hernia may be demonstrated roentgenologically or only solid organs may be herniated.

Diaphragmatic hernia must be differentiated from eventration of the diaphragm, diverticulum of the cardiac end of the stomach and diverticulum of the lower end of the esophagus.

**ANTHONY F. SAVA M D**

# GYNECOLOGY

## UTERUS

Grant W W An Improved Technique in the Operations of Colporrhaphy and the Watkins Interposition Operation *Tr West Surg Ass* 1918

In the modified technique employed by Grant in colporrhaphy and the Watkins interposition operation the bladder is distended with warm water instead of being evacuated. In pronounced cystocele and in descent of the uterus and procidentia following lacerations due to childbirth the bladder is usually found prolapsed in the pocket of the prolapsed anterior vaginal wall. In colpotomy and the Watkins interposition operation as they are usually performed the primary procedure is exactly the same.

In the improved technique that is suggested by Grant the long anteroposterior incision of the anterior vaginal wall in common use is discarded in both. To get the base of the bladder out of the danger zone Grant conceived the idea of filling it with warm water. This procedure has proved entirely satisfactory.

It is followed by transverse incision of the vaginal wall just beneath the posterior urethra by one bite with the scissors entering at once the loose connective tissue space between the bladder and the vagina.

The dissection is completed to any depth or width desired with the fingers and curved blunt pointed scissors or with gauze. Grant has found that by this procedure the dissection can be completed to the base of the bladder with extreme rapidity ease and safety.

In colporrhaphy the oval section of the vagina is completed by two anteroposterior lateral incisions (instead of three as in the usual method) and the denuded area is closed with a chromic gut continuous suture. In the Watkins procedure the anterior cul-de-sac is opened at the cervicovaginal line the reflected peritoneum is penetrated with the finger and blunt pointed scissors and the handle of the instrument is then spread to make the opening of the peritoneum sufficiently large to accommodate the uterus.

The fundus uteri is grasped as usual with tenacula and pulled into the pocket that has already been prepared between the bladder and vagina. By this method the integrity of the vaginal wall is fully preserved with no risk to the healing process incident to a long vaginal incision having the weight and pressure of the uterus upon it. The fundus is fixed by non absorbable sutures to the vaginal incision or to the subpubic tissues as recently advised by Kelly.

Ahumada J C and Prestini O Tuberculosis of the Cervix of the Uterus (Tuberculosis del cuello del útero) *Rev argent de obst y ginec* 1918 21, 74

The authors report a case of tuberculosis of the cervix successfully treated with radium. No other tuberculous lesion could be found.

Tuberculosis confined to the cervix is much rarer than tuberculous endometritis or salpingitis. It is often confused with cancer of the cervix but the tuberculous lesion is more elastic and less friable than the cancerous and is usually covered by a mucopurulent fluid which is very different from the gummy purulent exudate of an epithelioma.

WILLIAM R. MEERER M.D.

Cullen T S Uterine Hemorrhage and Its Treatment *Canadian M J Ass J* 1918 212 411

Conditions causing uterine hemorrhage fall into two groups (1) those dependent upon a recent pregnancy and (2) those independent of a recent pregnancy. This classification simplifies the study.

Uterine hemorrhage dependent upon a recent pregnancy occurs with premature separation of the placenta retained membranes hydatidiform mole chorionepithelioma tubal pregnancy and pregnancy in one horn of a bicornate uterus. The author discusses the history the physical findings and the importance of microscopic diagnosis of material expelled from the uterus. The diagnosis of hydatidiform mole is materially helped by the palpation of bilateral cystic tumors on either side of a rapidly enlarging uterus (multilocular lutein ovarian cysts). These cysts occur only with hydatidiform mole and chorionepithelioma and disappear spontaneously on removal of the mole or the chorionepithelioma. The histological pictures of mole and chorionepithelioma are much alike. Coagulation necrosis of tissue lining the uterus is strong presumptive evidence of malignancy. Bluish discoloration around the umbilicus indicates the presence of free blood in the peritoneal cavity, and in women this is often the result of hemorrhage from an extra uterine pregnancy.

Uterine hemorrhage occurring independently of a recent pregnancy may be due to (1) a constitutional condition (2) benign changes in the mucosa of the cervix and uterus (3) malignant changes (4) uterine tumors or (5) disease of the adnexa. Under benign changes causing bleeding the author lists cervical and uterine polyps hyperplasia of the endometrium and senile atrophic changes in the uterine and cervical mucosa. Malignant changes include squamous cell carcinoma and adenocarcinoma of the cervix adenocarcinoma of the body of the uterus (squamous cell carcinoma is rare) and sarcoma of the endometrium. Cullen stresses the

importance of microscopic diagnosis as an index to the proper treatment of these conditions. Uterine tumors causing hemorrhage are myomata, adenomyomata and sarcomata. Myomata are common. A submucous myoma 2 or 3 cm. in diameter projecting into the uterine cavity may cause severe bleeding. Adenomyomata generally cause profuse and prolonged menstruation but no intermenstrual bleeding. Sarcomata are relatively rare. In 1 or 2 per cent of the cases they are associated with uterine myomata. On section they are readily differentiated from the latter by their homogeneous, pork-like non striated appearance. They are readily broken up with the finger. It is important to remember the association of uterine tumors with cancer. In the author's cases of myoma, cancer of the cervix was found in 1 per cent and cancer of the fundus in 2 per cent.

Disease of the tubes or ovaries is not an infrequent cause of uterine bleeding and may be difficult to differentiate from extra uterine pregnancy.

In conclusion Cullen says that the treatment of uterine hemorrhage will be improved as the etiology becomes better known. ALICE F. MAXWELL, M.D.

Sampson J. A. Endometriosis Following Salpinxectomy. *Am J Obst & Gynec* 1928 xvi 461

The evidence indicating that peritoneal endometriosis at times arises from the implantation of müllerian epithelium escaping through or from the tubes may be summarized as follows:

1 Peritoneal endometriosis occurs in women and not in men.

2 It is an acquired lesion and usually (possibly always) develops during menstrual life and most frequently in the latter half of that life.

3 Experiments in the autotransplantation of bits of müllerian mucosa in the lower animals by Jacobson and others showed that such mucosa may be successfully transplanted to the peritoneum of these animals.

4 The study of postoperative endometriosis in women shows (or at least suggests) that tubal and uterine epithelium may be transplanted by the surgeon.

5 The study of endometrial tissue in the ovaries suggests that this tissue may spread to the peritoneum by the implantation of epithelium which escapes from the ovary both through the perforation (menstrual) of endometrial cysts and also the menstrual reaction of endometrial tissue on the surface of the ovary. This evidence is purely circumstantial but is most convincing.

6 Peritoneal endometriosis often occurs without any discernible endometrial tissue in the ovaries. Therefore the latter is not essential for the development of the peritoneal lesion.

7 One of the outstanding features in cases of peritoneal endometriosis is patency of the tubes. In 347 cases of peritoneal lesions containing endometrium like tissue (other than postoperative cases) which were seen in the last six years both tubes

appeared to be patent in 330. Unilateral hæmato-salpinx was present in 3 and bilateral hæmatosalpinx in 4. Patent tubes apparently increase the incidence of peritoneal endometriosis and the relatively large number of patients with hæmatosalpinx must be of some significance. In the cases with occlusion of both tubes the peritoneal lesions might have been present prior to the closure of the fibrotic ends of the tubes.

8 The peritoneal lesions often occur in situations and under conditions indicating their origin from material escaping from or through the patent tubes.

9 The study reported in this article shows that after salpingectomy the traumatized mucosa of the tubal stump may invade not only the stump but also any structure adjacent or adherent to it and give rise to the lesions of peritoneal endometriosis including typical endometrial cysts or hæmatomata of the ovary.

10 These studies show also that the misplaced tubal mucosa may assume the structure of the uterine mucosa. Therefore many of the endometrium like lesions of peritoneal endometriosis may be of tubal rather than uterine origin.

11 It has been shown that bits of the uterine mucosa set free by curettage may be carried by blood escaping from the uterine cavity into the tubes.

12 It has been shown also that during menstruation blood may escape from the uterine cavity into the tubes and that this blood may contain bits of uterine mucosa.

13 There is evidence indicating that bits of uterine mucosa may escape into the venous circulation of the uterus during menstruation and become implanted in the venous sinuses of the uterine wall.

14 Since peritoneal endometriosis develops during the menstrual life of women and since the menstrual reaction often causes a dissemination of bits of uterine mucosa and possibly also of the tubal mucosa, menstruation may be an important factor in the dissemination of müllerian epithelium into the peritoneal cavity.

15 Tubal epithelium might readily escape from the tubal fimbriae independently of menstruation.

16 The evidence thus far obtained shows that peritoneal endometriosis may arise from the implantation of both tubal and uterine epithelium.

17 The present studies support this theory and emphasize the origin of peritoneal endometriosis from the implantation of tubal epithelium but do not exclude its origin from other sources.

E. L. CORNELL, M.D.

Ward G. G. Radium Therapy of Carcinoma of the Cervix Uteri. *Brit M J* 1928 xi 657

Murray E. F. Radium in the Treatment of Carcinoma Cervicis and Intractable Menorrhagia. *Brit M J* 1923 xi 609

Before the discovery of radium by Mme. Curie cancer of the cervix uteri was treated by local destruction of the carcinomatous tissue by cauteriza-

tion or operation. The question today is Can we with radium obtain the same result in cancer of the cervix as can be obtained by the Wertheim operation without the high mortality of that operation? WARD reports the results obtained with radium in the Woman's Hospital of New York.

The armamentarium consists of about 280 mgm of the salt in tubes and needles and the average initial dose has been from 2 400 to 4 200 mgm hrs. Experience has shown that the employment of massive doses cannot give any better results than the intelligent application and re application of smaller doses. In 50 per cent of the cases re irradiation has been done and in many of the cases with a successful outcome three or more irradiations have been given. The following tables summarize the results.

TABLE I FIVE YEAR END RESULTS (MAY 1928) OF RADIUM TREATMENT OF CARCINOMA OF THE CERVIX UTERI AT THE WOMAN'S HOSPITAL NEW YORK.

Type of case	Primary treated	Re-treated	N	Five year follow up	
				Living	Dead
Class 1	34	20	3	10	3
Class 2	134	20	27	10	31
Class 3	1	1	1	1	1

Primary mortality 44 per cent.

TABLE II COMPARATIVE FIVE YEAR RESULTS AND PRIMARY MORTALITY OF RADICAL OPERATIVE AND RADIOLOGICAL TREATMENT IN TOTAL CASES OF CARCINOMA OF THE CERVIX

	Primary mortality	Primary mortality
All cases	53	73
Operative treatment	53	73
Radiological treatment	4	4
Woman's Hospital Clin May 9 2	3	3
From Hyman Report May 9 7		

TABLE III COMPARATIVE FIVE YEAR RESULTS IN OPERABLE CASES OF CARCINOMA OF THE CERVIX

	Five year follow up	Five year follow up
All cases	35	35
Operative treatment	35	35
Radiological treatment	4	4
Woman's Hospital Clin May 9 2	3	3
From Hyman Report May 9 7		

MURRAY reports a study of over 200 cases of carcinoma of the cervix and intractable menorrhagia treated with radium since January 1926 and 130 cases in which a Wertheim operation was done. Radium bromide (100 mgm) was applied for twenty four hours to the external os. After the application the patient was kept at rest for fourteen days. 5 gr of potassium iodide were given three times daily and a douche was given daily.

The after results in 38 operable cases treated by the radical operation alone are compared with those obtained in a similar number of cases in which the radical operation was done after a preliminary

application of radium. The lapsed time was three years in the first group and one year in the second group. The results were as follows:

Operation only	Per cent
Alive and well	60
Operative deaths	5
Recurrence	30
Death from other causes	5

Radium and operation	Per cent
Alive and well	44
Operative deaths	10
Recurrence	34
Death from other causes	0

These results appear most unfavorable to radium but their correct interpretation is that by the use of radium it is now possible to include in the operable group cases in which in the earlier days, the surgeon would have hesitated to operate.

In 1909 table cases radium undoubtedly improves the local condition. After the irradiation there is usually a smoothing and ultimately a contraction of the ulcerated area. The patient reports that she feels better and that the bleeding and even the discharge has ceased. The average duration of life does not appear to be greatly influenced in the majority of cases. Of 23 patients who were considered inoperable in 1926 and were treated with radium alone 4 were alive in July 19 28 but 3 of them are in poor health. Of 24 patients who were regarded as inoperable in 1927 17 are dead 3 are dying and 2 show no definite change.

Murray concludes that radium treatment is safer than hysterectomy gives almost as certain results as operation and is the preferable form of treatment in such cases. The advantage to the patient in every respect is obvious. Radium irradiation is especially indicated in the cases of patients suffering from disease of the heart, lungs or kidneys in which prolonged anesthesia and a major operation should be avoided. It is the ideal treatment for extremely nervous and elderly patients. It might be of use also in producing the artificial menopause in patients suffering from pathological blood disease with a view to conserving the blood supply.

HARRY W. FINE, M.D.

#### ADNEXAL AND PERIUTERINE CONDITIONS

Novak E. and Everett H. S. Cyclical and Other Variations in the Tubal Epithelium. *Am J Obst & Gynec* 1928 xvi 499

While the tubal mucosa does not participate in the bleeding of the menstrual process its epithelium exhibits a definite cyclical change which is comparable to that of the endometrium but not nearly so conspicuous as the latter consisting more in microscopic changes in the cells rather than in the grosser changes in pattern seen in the endometrium. The authors' conclusions from examinations of the

tubes in 136 cases in the majority of which the endometrium also was available for study are as follows

1 The tubal epithelium consists of two chief types of cells the ciliated and the non ciliated. The latter are often spoken of as secretory cells (A third type the peg cells (Stützbezellen) Schaltzellen) have also been described but it is probable that these represent only a phase of the non ciliated cells

2 In the interval phase the epithelium is uniformly tall the ciliated cells being broad with rounded nuclei near the free margin while the non ciliated cells are narrower with nuclei more deeply placed and taking a deeper stain

3 In the premenstrual phase the ciliated cells become lower so that the secretory cells project beyond them giving the epithelial margin a ragged uneven appearance. The secretory cells show a bulbous herniation into the lumen of the tube. In spite of the great loss of cells mitoses are rarely seen in the tubal epithelium

4 During the stage of menstruation the premenstrual changes are carried farther the epithelium becoming quite low. The ciliated cells especially remain broad and low but the secretory cells also having been emptied of their cytoplasm are much lessened in height the nuclei often being quite bare of cytoplasm. Peg cells are numerous and their appearance and distribution suggest that they are merely emptied secretory cells

5 The postmenstrual phase is characterized first by a low epithelium which quite rapidly increases in height so that by the third or fourth day after menstruation it is often almost as tall as during the interval phase. The cells are narrow closely placed and after the first day or so of uniform height

6 During pregnancy the epithelium becomes even lower than in the menstrual stage and in the later stages it may become almost flat in many places. Secretory changes are not seen at this time

7 Cilia can be demonstrated in all stages especially by the examination of fresh tissues by the technique described. They are found also in the tubal epithelium of young children and of women many years beyond the menopause. This suggests that they must have some other function than that of assisting in the propulsion of the ovum. Perhaps as has been suggested by Hartman their chief rôle is that of keeping the tubal lumen cleansed of foreign particles

8 Efforts at differential staining of the secretion have thus far been unsuccessful. Neither glycogen nor mucin can be demonstrated. There is as yet no positive knowledge regarding the significance of this tubal secretion

9 The prepubertal tubal epithelium is rather low but shows both chief types of cells. Cilia however are very sparse and are usually not seen at all in fetal or very early postnatal life

10 The epithelium of the postmenopausal tube may remain quite high for a surprisingly long time

perhaps a number of years after the cessation of menstruation. Cilia also may persist for many years. Sooner or later however the tubal folds become rounded and of fibrous appearance the epithelium becomes low or even quite flat and the cilia of course disappear

11 The tubal epithelium of tubes removed from patients suffering from hyperplasia of the endometrium was studied because the latter condition is unquestionably associated with a functional disturbance of the ovaries. Characteristically the epithelium was found to be high uniform and compact with narrow cells most of which were ciliated. There was no evidence of secretory change. This bears out the view for which there is other evidence that the functional disturbance consists of an excess or persistence of the follicle stimulus with absence of the corpus luteum influence

12 The comparison of the tubal cycle in women with that of the lower animals like the comparative study of the uterine and ovarian cycles emphasizes the important differences chronological and histological which exist. For example the oestrus tube of the rodent resembles not the menstrual or premenstrual tube of the human being but the interval phase. Since oestrus in the lower animals is due undoubtedly to the follicle hormone it seems clear that in the human being the maximum of follicle influence is reached during the interval phase and that the later changes are due to the corpus luteum influence. To bear this out the picture in the animal tube which resembles the human premenstrual tube is that seen in the metoestrus during which stage the corpus luteum apparently plays the dominating rôle

F. L. CORNELL M.D.

Williams J. W. Therapeutic Sterilization *J. Am. M. Ass.* 1918 xii 1237

The author reports 118 sterilizations performed in 33,000 obstetrical cases admitted to the Johns Hopkins Hospital. The sterilization was an essential feature of the intervention. In other cases not included in this series it was unavoidably associated with an operation such as Porro section for uterine infection, hysterectomy for ruptured uterus or uteroplacental apoplexy, salpingectomy or oophorectomy (or both) for adnexal disease etc.

Sterilization may be effected by (1) operations on the ovaries such as castration or burying of the ovaries under the peritoneum (2) operations on the tubes (3) operations on the uterus or (4) the use of the X-ray. Castration is undesirable and burying of the ovaries is uncertain. The X-ray is uncertain when permanent sterility is desired and when it is used for temporary sterility may damage the ovum so that serious fetal abnormality may result when an ovum is fertilized.

Hence for the production of permanent sterility we are restricted to uterine or tubal operations. Of these the only reliable procedures are hysterectomy (preferably supravaginal) and wedge shaped cornual excision of the proximal ends of the tubes



with careful closure of the uterine wound with fine sutures. These operations may be performed on non pregnant women, pregnant women or following cesarean section at or near term.

Of the 118 women whose cases are reviewed, 66 were sterilized at term (34 by radical section and 32 by conservative section plus tubal sterilization), 45 were operated upon prior to viability (2, by hysterectomy and 18 by hysterotomy plus tubal sterilization) and 7 were non pregnant (4 treated by hysterectomy and 3 by tubal sterilization). Of the 66 sterilizations at term, 48 were performed on account of marked disproportion necessitating repeated section, the sterilization generally being done at the third or fourth section. The majority (about 90 per cent) of the hysterectomies were performed on colored women who are much more indifferent to the preservation of menstruation than white women.

Pathological conditions in the series necessitating sterilization were chronic nephritis (28 cases, 9 at term and 19 before viability), serious heart disease (12 cases, 5 at term, 6 before viability and 1 at the end of the puerperium), tuberculosis (9 cases all early in pregnancy) and disease of the solitary kidney after previous nephrectomy (2 cases both treated by hysterectomy). In the case of a woman with a sacculated uterus which had been previously suspended, the appendages on one side being removed simultaneously, sterilization was performed after section at term by cornual excision of the remaining tube, chiefly on account of persistent abdominal pain throughout the pregnancy.

In the past seven years the author has performed sterilizing operations 15 times for psychiatric indications and 4 times for social indications. He realizes that the validity of such indications may be questioned, but believes that in these few cases selected from a much larger number studied in collaboration with the psychiatric and social welfare departments the indications were definite.

In Williams' opinion the prevention of conception is justified by chronic nephritis, tuberculosis, serious heart disease and frequent childbearing in the case of a debilitated woman. No procedure is absolutely certain, but the best is the use of the sheath or the occlusive pessary. Absolute continence is of course the only thoroughly reliable method, but in most cases is impossible of realization and may lead to marital unhappiness. Advice regarding contraceptive methods may be accepted by intelligent patients, but in the cases of the ignorant or feeble minded sterilization by operative means is preferable.

E. L. KROG, M.D.

Laqueur E. and De Jongh S. E. A Female (Sexual) Hormone. *J Am Med Ass.* 1928 xii 1169.

The authors have isolated a water soluble non toxic hormone which they called menformon. Its biological and biochemical properties are summarized as follows:

- 1 It produces oestrus in castrated rats and mice.
- 2 Experimentally it increases the size of the juvenile uterus, vagina and tubes.
- 3 It induces growth of the mammary glands in young females and males. When small doses are given only the glandular tissue grows, large doses develop the external parts, fat tissue and mamillae.
- 4 It increases metabolism only in castrated females.
- 5 It has an antimasculine influence on the testes, penis, seminal vesicles and prostate. In young male animals it retards growth and in adult males it causes a considerable reduction in the size of the testes.
- 6 It is non toxic over long periods of time.
- 7 It is resistant to heat and the action of alkali, acids, ferments and reducing agents, but is susceptible to oxidizing agents.

Menformon occurs in and may be prepared from normal organs and fluids (placenta, testis follicular fluid, amniotic fluid and urine).

It is marketed as a solution containing 40 units per cubic centimeter. A unit is the minimum (M.U.) the smallest quantity which divided into six doses in forty eight hours produces symptoms comparable with those of normal oestrus in 75 per cent of castrated mice into which it is injected.

The authors report only experiment 1 data. The therapeutic efficacy of menformon in clinical cases is not discussed.

CHASLES F. DU BOIS, M.D.

Allen E. Pratt, J. P. Newell, Q. U. and L. L. Recovery of Human Ova from the Uterine Tubes. *Time of Ovulation in the Menstrual Cycle.* *J Am Med Ass.* 1928 xii 1018.

Relatively little is known of the human ovum from just before the time of ovulation until after the time of implantation of the developing embryo in the uterus. Consequently the time of ovulation in the menstrual cycle in woman has been computed chiefly from the condition of the corpus luteum rather than from the finding of ova in the tubes. In an attempt to fill the gap in our knowledge of early human embryology, the authors planned a cooperative investigation with the following objectives: (1) the recovery of human ova from the uterine tubes; (2) the correlation of their condition with the menstrual history and the stage of development of the early corpora lutea from which the ova had been extruded; and (3) a quantitative and qualitative analyses of the amount of ovarian hormone in tissues of the human ovary.

Seven human ova were recovered from tubes. The first ovum was obtained from a woman who was operated upon on the fifteenth day of the menstrual cycle (after the onset of the previous menses). It appeared to be in good condition and measured 0.17 mm. in its greatest diameter. The outlines of the outer membrane (zona pellucida) were clearly visible. The egg was slightly ovoid and transparent. The yolk was a very light yellow. The corpus luteum of this ovum had a free rupture point which

was visible on the surface of the ovary. When opened the corpus luteum was found to be thin walled and to have a central cavity filled with blood tinged straw colored fluid.

Among the other cases in which ova were collected there was one case in which an ovum was obtained from each tube. Each ovary contained an early corpus luteum. Another case illustrated the internal migration of the ovum from the left ovary to the right tube.

Some of the observations made during this study indicate that menstruation without ovulation which is so common in the monkey must be recognized as occurring in woman.

IRVING W. FRY, M.D.

### MISCELLANEOUS

Giles A. E. The Diagnosis and Treatment of Sterility. *Brit. M. J.* 1928 II 647.

Forsdike S. The Diagnosis and Treatment of Sterility in Women. *Brit. M. J.* 1928 II 643.

Giles states that in the study of sterility in the female the general and sexual development of the woman and the possibility of normal intercourse of effectual reception of spermatozoa at the os externum of the passage of spermatozoa through the tubes and of normal development of the fertilized ovum in the uterus must be considered. He discusses the typical pinhole os, marked retroversion and acute anteversion of the uterus and the character of the vaginal discharge.

For cases of under development Giles recommends marriage and the administration of thyroid and ovarian products. Thyroid extract can quite well be given by mouth but the ovarian extract should be administered by hypodermic injection. For faulty metabolism with pronounced obesity Giles advises reduction of weight supplemented by the administration of thyroid. Difficulty in intercourse should be remedied by digital dilatation under anesthesia or a plastic operation. In some cases artificial insemination may be advisable. When there is hindrance to the entry of spermatozoa into the cervical canal dilatation of the cervical canal should be carried out. A glass intra uterine stem pessary should be introduced and retroversion or retroflexion corrected. Discharges due to adenomatous disease of the vaginal aspect of the cervix (erosion) or to endometritis especially of the cervical type require curettage. Tubal obstruction can be overcome only by surgery.

Forsdike divides the causes of sterility into the congenital, the acquired and the functional. From the clinician's point of view the cases may be divided on physical examination into two groups: (1) those in which gross lesions are present and (2) those in which there is no gross lesion or no lesion sufficient to account for the condition. This article is limited to cases of the second group.

Twenty five per cent of childless marriages are due to the condition of the husband. The semen of 46 of 146 men whose wives came under the author's care for sterility was found to be defective.

The study of a case of sterility in the female should begin with a search for spermatozoa in the vagina and the cervix following coitus.

Forsdike describes the exploration of the uterus by dilatation of the cervical canal and inflation of the uterus and tubes with gas or air. Without anesthesia he uses a pressure of 300 mm Hg provided the patient does not complain. If that pressure is attained and no air passes the tubes are definitely closed. When anesthesia is induced the pressure never exceeds 200 mm Hg as the patient cannot warn of tension pain. With anesthesia and the abdomen open Forsdike allows the pressure to go up to 300 mm Hg. If the test is positive there is no doubt about the patency of the tubes but if it is negative it may mean that the tubes are temporarily blocked by kinking. Inflation shows only whether the tubes are patent or closed. It does not reveal the site of closure. Plastic operations on the narrow part of the tube are not justified. In cases of obstruction of the tube at the fimbriated extremity operation was successful in 45 per cent but successful results were obtained in only 10 per cent. The most favorable cases are those in which the fimbria can be saved. The ovary should be freed and loosely fixed in the mouth of the new ostium. When an incision is necessary to establish a new ostium the serous coat should be undercut so that the suture carries the peritoneal edge over the raw surface thus preventing the formation of adhesions.

The X ray examination of the uterus and tubes is facilitated by the use of lipiodol. Lipiodol has no ill effect upon the peritoneum. The technique of its use is described. In order to obtain the fullest information regarding the tubes an oblique roentgenogram should also be taken at the time of injection when the tube is in the uterus. A second roentgenogram made a day or two after the examination will show the lipiodol in the peritoneal cavity. Lipiodol is absorbed and disappears from the peritoneal cavity in from seven to ten days. It disappears from the uterus by gravitation in one or two days but when injected into closed tubes it may produce a shadow for several months. When lipiodol is being used as a therapeutic agent 5 c.c. is all that is necessary, a quantity sufficient to fill both tubes and the uterus.

Of a number of apparently normal women subjected to inflation of the uterus and tubes 31 per cent became pregnant subsequently. Seven (23 per cent) of the pregnancies ensued so closely upon the inflation that the inflation and conception may be considered in the relation of cause and effect.

Lipiodol injection in sixty seven cases showed that in twenty six cases the tubes were apparently closed.

When the patient remains sterile for three months after inflation showing the tubes to be patent Forsdike makes an examination with lipiodol and delays further procedures for nine months. When inflation shows the tubes to be closed he attempts a plastic operation on the tubes if an investigation

with lipiodol the obstruction is found to be in the ampulla. If the sterility still persists after all this has been done only the ovaries remain to be considered. These organs should be examined by abdominal operation.

The conditions in the ovaries which may be expected to hinder conception are (1) a thickened tunica albuginea (2) cystic ovaries (3) cysts of one or both ovaries and (4) veils of peritoneum which completely shut off the ovaries from the peritoneal cavity. Incision and scarification of the thickened tunica is likely to induce a more extended infection with the formation of additional adhesions and resection of a cystic ovary merely increases the fibrous tissue already present. Cysts of one or both ovaries in contradistinction to cystic ovaries exert a restrictive influence upon successful ovulation. Forsdike has operated upon six cases of small unilateral cysts in which the duration of sterility was three, five, five, six, seven and seven years respectively. In four, pregnancy resulted within three months.

Forsdike believes that the condition usually described as incompatibility or selective sterility is a combined relative sterility in which the fertility of both the male and the female is low.

ROLAND S. CROW, M.D.

Polak, J. O. and Tollefson, D. G. What Can We Learn from a Study of Mortalities? *Am J Obst & Gynec* 1928 xvi 600

The authors have analyzed the mortality in the Long Island College Hospital in the past five years. The total mortality among 4,270 cases admitted was 138 deaths. Forty-three of the deaths occurred in cases not treated surgically and therefore are not considered in the discussion. In the 3,125 cases operated upon there were 95 deaths. The fatal issue can be attributed to one of the following

causes: (1) an omission in the history or the physical or laboratory examinations or misinterpretation of the findings; (2) inadequate pre-operative preparation; (3) cardiac embarrassment caused by the use of the high Trendelenburg position in cases with a high blood pressure; (4) shock caused by the prolonged use of the Trendelenburg position in cases with a low blood pressure; (5) too much surgery at one time; (6) too great prolongation of the operation; (7) operation performed following prolonged subacute or chronic infection with a leucocytosis or leucopenia; or (8) operation in the presence of active infection.

The gross operative mortality in the five year period was 2.9 per cent. The fatal cases are divided as follows:

1. Cases of malignancy in which the abdomen was opened to confirm the diagnosis and an inoperable condition was found. In this group there were 25 cases.

2. Emergency cases. This group included 3 cases of acute appendicitis with diffuse peritonitis, 11 cases of sepsis, 2 cases of gall bladder disease and 1 case of ruptured ovarian cyst.

3. Cases of elective operation. In this group there were 52 cases. Of 2 patients subjected to a vaginal operation, 1 died from intercurrent pneumonia two weeks later and the other from acute suppurative peritonitis following treatment with radium.

The authors state that a review such as is here presented is a sad commentary on surgical judgment and surgical care. They conclude that not sufficient attention is given to the suggestive findings developed in pre-operative study, and emphasize the fact that surgical judgment can be developed only by pathological study of the living.

E. L. CORSELL, M.D.

# OBSTETRICS

## PREGNANCY AND ITS COMPLICATIONS

Siddall A. C. The Hormone Test for Pregnancy  
Report II *J Am M Ass* 1928 xci 779

The hormone test for pregnancy is based on the effect of the injection of gravid female blood serum on the uterus and ovaries of white female mice. The total weight of the mouse divided by the weight of the uterus and ovaries gives a ratio which serves as an index. If the ratio is above 400 the test is negative for pregnancy whereas if the ratio is less than 400 the test is positive.

Sexually immature mice react differently than sexually mature mice. In the mature animal there is an enlargement of the ovary associated with the formation of corpus luteum. In the immature animal there is an enlargement of the uterus.

The author believes that uterine enlargement is caused by an ovarian or a placental hormone. The ovarian enlargement which occurs in the mature animal is probably due to the anterior pituitary hormone.

In 139 cases in which the hormone test for pregnancy was used there were only 6 erroneous results. This test has been employed also for the qualitative determination of the potency of commercial liquid extracts of ovary and anterior lobe of the pituitary gland.

CARL H. DAVIS, M.D.

Lobry F. and Dalsace J. Six New Cases of Pregnancy Following Exploration of the Tubes by the Injection of Lipiodol (Six nouvelles grossesses consécutives à des explorations tubaires par injection de lipiodol). *Bull Soc d'obst et de gynéc de Par* 1928 xvi 612

The authors add six new cases of pregnancy following the injection of iodized oil to two cases previously reported. That the pregnancies were not merely coincident with the exploration of the tubes is evident from the fact that the patients had remained sterile after other methods of treatment. The case records were briefly as follows:

CASE 1 The patient was thirty four years of age. Menstruation was established at the age of fifteen years. It was painful but otherwise normal. The patient had been married eight years but had never been pregnant. Several dilatations and a tracheloplasty failed to cure the sterility. Lipiodol injection showed the right tube to be obliterated and the left tube to be permeable. The patient became pregnant four months after the examination.

CASE 2 The patient was thirty three years of age. Menstruation was established at the age of fifteen years. It was painful but otherwise normal. The patient had been married for two years and had never been pregnant. An insufflation in 1927 was negative. An

injection of lipiodol in 1928 demonstrated permeability of both tubes. Pregnancy began two months after the examination.

CASE 3 The patient was a woman twenty five years of age. She had been married one year and had never been pregnant. Six attempts at insufflation failed to demonstrate permeability of the tubes. An injection of lipiodol revealed a small uterus in backward and lateral displacement. The tubes were short and slender but patent. Pregnancy occurred two months later.

CASE 4 The patient was thirty years of age. She had been married eight years but had never been pregnant. Menstruation was entirely normal. Dilatations and pelvic massage were without effect on the sterility. The injection of lipiodol showed extreme lateral flexion of the uterus and permeability of both tubes. The patient became pregnant two months later.

CASE 5 The patient was thirty six years old and had been married since 1920. Menstruation was normal. During 1923 two spontaneous abortions occurred in the sixth week. In 1924 the patient had a full term normal pregnancy but she had not been pregnant since then. Injection showed both tubes to be very long but permeable. Two months later an abortion occurred.

CASE 6 The patient was thirty four years old and had been married one year. Menstruation was normal. Abortions occurred in 1922 and 1927 in the sixth week and fifth month respectively. Exploration with lipiodol was performed to determine the cause of the abortions. The uterus was markedly flexed to the left and retroverted. The right tube was greatly elongated and the left tube short and scarcely permeable. Pregnancy occurred the next month after the examination.

In Cases 2 and 3 lipiodol injection demonstrated permeability of the tubes which could not be obtained by insufflation. Practicing insufflation and lipiodol injection on the same patients the authors found seven who were negative to insufflation but positive to lipiodol.

In Cases 3 and 4 the tubes which were at first blocked became permeable after a pressure of 30 mm of mercury had been maintained for from twenty to thirty minutes. During the course of the procedure colic, nausea and faintness frequently occur but if the pressure is controlled by an accurate manometer these symptoms should not interrupt the injection.

The dangers of the method are slight. In 150 cases there were no accidents. The incidence of successful results in the treatment of sterility cannot be determined with certainty. In 63 private cases treated in this way there were 7 pregnancies whereas in 52 hos

pital cases there was only 1 pregnancy. It is possible however that some of the latter group of patients were referred to the maternity wards of the hospital and thereby escaped observation.

ALBERT F. DE GROOT, M.D.

Frey E. and Lardi F. Heart Disease and Pregnancy and Abdominal Cesarean Section under Local Anesthesia in Cases of Heart Disease (Herzfehler und Schwangerschaft und d. e. abdominale Schnittentbindung in Lokalanästhesie bei Herzfehlern). *Ztschr. f. Gynäk. u. Geburtsh.* 1923 XLII 1

On the basis of the literature the authors first discuss the influence of pregnancy and labor on the normal and diseased heart and the prognosis and treatment of heart disease in pregnancy. They then report the experience of the Zurich clinic in 966 deliveries occurring in the period from 1920 to 1926. Among these cases there were 74 of pregnancy complicated by heart disease.

In 11 cases the pregnancy was interrupted therapeutically during the first half. In 43 cases delivery occurred spontaneously by the natural route at term and in 19 cases cesarean section was done under local anesthesia in the second half of pregnancy or during labor.

The cases in which the pregnancy was interrupted included 3 cases of mitral insufficiency, 2 cases of mitral stenosis plus insufficiency, 1 case of mitral stenosis and 6 cases of other heart lesions. In 10 of these 12 cases abdominal cesarean section with tubal sterilization was done under local anesthesia. All of the women except 1 were discharged with compensation and free from symptoms.

The cases in which delivery occurred spontaneously included 19 with mitral insufficiency, 13 with mitral insufficiency plus stenosis, 6 with mitral stenosis and 5 with other heart lesions. In 6 cases there were slight signs of decompensation. All 43 mothers left the clinic with full compensation and without symptoms. The favorable course in the cases with mitral stenosis was noteworthy.

The cases of abdominal delivery included 8 with uncomplicated mitral stenosis, 5 with mitral stenosis plus insufficiency, 2 with aortic insufficiency plus mitral stenosis, 2 with mitral insufficiency and 2 with congenital heart disease. Signs of decompensation were present in 13 of these 19 cases. All of the women had complete compensation after the puerperium and were without symptoms when discharged.

Attention is called to the very high percentage of mitral stenoses among the lesions that made cesarean section necessary (79 per cent). On the other hand there were only 2 cases of mitral insufficiency in this group. As spontaneous delivery occurred in 19 cases the author believes that the routine interruption of pregnancy in cases of mitral stenosis which is demanded by many obstetricians is not justified. He admits however that mitral stenosis must be regarded as decidedly graver than other heart lesions.

LARSEN (G)

Engelsgaard H. d. U. A. A Case of Bilateral Extra Uterine Pregnancy (Ein Fall von doppelseitiger Extrauterin gravidität). *Med. tidskr.* 1923 XLV 10

The patient whose case is reported was a woman thirty three years of age whose first child was born eight years previously by normal labor following a normal pregnancy. Menstruation had always been regular except that two years before there was an interval of seven weeks between two periods during which there was abdominal pain followed by slight bleeding for five days.

On the left side beneath the umbilicus the abdomen was distended and a circumscribed painful resistance was found. The uterus was slightly enlarged and displaced to the left. Behind the uterus slightly to the left a sharply demarcated, uneven, firm and tender tumor could be palpated. The region of the left adnexa was not painful on pressure. The right adnexa were sensitive to pressure and presented a soft resistance. A diagnosis of extra uterine pregnancy was made.

Twenty cubic centimeters of Ipiodol were injected for metrosalpingography. The roentgen picture showed an enlarged uterus displaced toward the left. In the left tube there was a lipiodol shadow the size of a pea and on the left side above the tubal angle the skeleton of a fetus was distinctly recognizable. The length of the spinal column was 65 cm and the total length of the fetus about 16 cm. The right tube was closed and the uterus atonic.

Laparotomy revealed a tumor about the size of a fist in the lower part of the abdomen on the left side. This tumor was connected by adhesions to the omentum, the left adnexa and the uterus and was found to contain a mummified fetus and an atrophic placenta. On the right side there was a freely ruptured tubal pregnancy.

The tumor with the old abdominal pregnancy was removed and both tubes were extirpated. Convalescence was uneventful. *See also (G)*

Guillemin A. Acute Appendicitis with Rupture of a Bilateral Tubal Pregnancy (Appendicite aiguë et rupture de grossesse tubaire bilatérale). *Bull. Soc. d'obst. et de gynéc. de Par.* 1923 XLV 449

The case reported was that of a woman twenty three years of age. After a few days delay of a menstrual period the patient had taken an emmenagogue and thereafter the bleeding had lasted six days. Two days later she suffered an attack of severe pain in the right lower quadrant of the abdomen which was associated with rigidity and a temperature of 102 degrees F and confined her to bed for three days. A week later she had another attack with more severe symptoms in the region of the appendix and a slight discharge of blood from the vagina. This attack was of short duration but after another seven days the pain recurred with symptoms of shock. At this time there was no fever. Examination revealed rigidity and tenderness in the right lower quadrant of the abdomen and distention of the cul-de sac of Douglas.

Operation disclosed a large quantity of blood in the pelvis and a ruptured pregnancy in each tube. Both ovaries contained a corpus luteum. The appendix was greatly inflamed and moderately adherent. Bilateral salpingectomy was performed with preservation of a stump of the right tube and the appendix was removed. Uneventful recovery resulted.

ALBERT F. DE GROAT, M.D.

Bompiani R. and Stilon V. Experimental Study of Premature Separation of the Placenta (Ricerche sperimentali sul distacco intempestivo della placenta). *Ist. ital. di ginec.* 1928 vii 457.

Experiments were made on rabbits to determine the cause of premature separation of the placenta. A renal lesion of the type of interstitial nephritis in man can be brought about in rabbits by the prolonged intravenous injection of sodium oxalate. A few injections of this substance cause changes in the kidney which are chiefly hemorrhagic. If such injections are given to a pregnant rabbit near term the pregnancy may be interrupted and necropsy may show a retroplacental clot which indicates beginning detachment of the placenta from its uterine attachment. If pregnancy occurs in a rabbit with a renal lesion of the type of interstitial nephritis and persistence of the lesion is maintained by repeated injections of sodium oxalate, abortion is very apt to result and not infrequently the fetus shows signs of mummification.

Nephritis of the interstitial type may cause premature detachment of the placenta and the formation of a retroplacental clot. In these cases in addition to free or coagulated blood in the cavity of the uterus there may be small punctate or stellate hemorrhages outside the zone of insertion of the placenta both on the surface of the mucosa and on the serosa of the horns of the uterus. Histological examination shows occult hemorrhages and areas of infarction in the placenta itself. The same phenomena are seen with even greater frequency and severity in rabbits with interstitial nephritis which have died from injections of extract of placenta.

The authors' experiments show the great importance of renal lesions in causing premature separation of the placenta, whether such lesions precede or begin acutely during the course of pregnancy.

AUDREY G. MORGAN, M.D.

Kreis J. Two Observations of Placenta Prævia Reflexa During Labor. Diagnosis Symptoms Treatment by Low Cesarean Section. A Study of the Formation of the Lower Uterine Segment (Deux observations de placenta prævia reflexa pendant l'accouchement. Diagnostic clinique traitement par césarienne basse étude de la formation du segment inférieur). *Gynéc.* 1924 1028 xviii 137.

Placenta prævia reflexa has rarely been diagnosed clinically.

The first case reported by the author was that of a woman who developed metrorrhagia a month before term. The loss of blood continued but was

very slight. At the onset of labor the cervix was 2 cm long and admitted a finger tip. After ten hours it had changed little if at all and contrary to expectations there was no bleeding. Careful examination revealed a thick membrane covering the internal os, through which the presenting part could scarcely be felt. Posteriorly and laterally the finger could be passed between what was believed to be the placenta and the uterine wall. Anteriorly and to the right the membrane was fixed solidly to the uterine wall. This membrane gave the sensation not of the cotyledinous surface of the placenta but of the fetal surface.

Because of a rise in the temperature a low cesarean section was performed. The placenta was found implanted on the anterior and right wall of the uterus, its lower border covering the internal os. After removal of the placenta the membrane 0.5 cm thick which had been palpated during labor was identified as the decidua reflexa.

In the second case reported the anatomical findings were nearly identical with those of the first case. There was no bleeding during labor and the characteristic vaginal findings permitted a clinical diagnosis. This patient also was delivered by low cesarean section.

So far as the author is aware these are the first cases of placenta prævia reflexa to be diagnosed during labor.

In neither of the cases was the cervix appreciably effaced. In the first case the lower uterine segment was little developed but in the second it was perfectly developed. The author concludes that the effacement of the cervix contributes nothing to the formation of the lower segment. He believes that the lower segment evolves from the corpus since in all low cesarean sections for placenta prævia the incision is always above the prævia portion of the placenta. This is true because the placenta prævia is practically always primarily inserted in the body of the uterus and covers the internal os which does not change position until labor begins.

In support of his theory the author cites also the following facts:

1. In primiparae the vaginal portion of the cervix is often nearly completely effaced but a cervical canal of 3 or 4 cm is conserved.

2. In partial placenta prævia artificial rupture of the membranes results in ascent of the placenta.

3. When the area of detachment of the placenta in a case of total placenta prævia is measured it is found to be much shorter than the surface of the placenta.

4. In a case reported there was a well developed lower segment with a cervical canal of 4 cm.

The conclusion is drawn that the uterine musculature ascends during pregnancy and labor and that this ascent is independent of the effacement of the cervix. The mechanism is explained by the disposition of the muscular layers of the uterus which allows the long external layers to be displaced upward without greatly affecting the short deeper

layers. This muscular arrangement explains also why the placenta does not become prematurely separated during normal labor.

ALBERT F. DE GROOT, M.D.

**Cathala Y. and Bardy J.** Can the Age of a Fetus Be Determined from the Degree of Development of the Bones? A Study Based on the State of the Centers of Ossification in Single Ovum Twins (L'Age d'un fœtus peut-il être fixé par le degré de développement de son ossification? Étude basée sur la recherche des points d'ossification chez les jumeaux univitelins) *Bull. Soc. d'obst. et de gynec. de Par.* 1928 xiv 601

From a comparison of the ossification centers of single ovum twins the authors draw the following conclusions:

1. When the twins are equally developed the centers of ossification are often but not always of the same size.

2. When the twins are of unequal development the centers of ossification are sometimes of the same size but more often are unequal. The inequality is proportional to the difference in the general bodily development.

ALBERT F. DE GROOT, M.D.

**Hofbauer J.** The Structure and Function of the Ureter During Pregnancy. *J. Urol.* 1928 xv 413

Pyelograms show that a moderate degree of hydro ureter is an almost constant concomitant of pregnancy. In examinations of 100 normal women during the seventh to ninth month Pugh noted that in 80 per cent the action of the ureters was sluggish.

In a study of the morbid anatomy of the urinary tract in pregnancy the author found definite hyperplastic and hypertrophic changes to the pelvic portion of the ureter both in the musculature and in the connective tissue. These changes were particularly pronounced in the juxtavesical portion where the ureter passes through the parametrium. Often the ureteral sheath equalled or exceeded the diameter of the ureter itself and the increased fibroplastic tissue between the hypertrophied muscle bundles created a rigid structure with the lumen narrowed. The striking feature of the intravesical portion of the ureter was the marked development of connective tissue and hypertrophy and hyperplasia of muscle bundles. Therefore histological evidence strongly indicates that urinary obstruction in pregnant women is caused by certain anatomical conditions in the juxtavesical portion of the ureter due to hyperplastic and hypertrophic changes in the constituents of the ureteral wall.

Recent experimental work has shown that a definite increase of bile acid occurs in the blood of pregnant women. Bile salts have a depressing effect upon the tone and contraction of the uterine muscle almost comparable to the effects of narcotics. They have a similar effect on the small intestines. In experiments on pigs ureters the author demonstrated that sodium glycocholate even in the proportion of 1 to 20,000 causes either a diminution in the amplitude of contractions or a prolongation of the

interval between contractions or both. Moreover adrenalin (1 to 1000) not only restores the normal contractions of the ureter but often induces more rapid peristalsis. Ephedrin is a less potent stimulant. In the pregnant pig the ureter shows a higher degree of sensitiveness to sodium glycocholate, smaller doses being capable of prolonging the intervals of contractions and also of entirely inhibiting them.

The depressing effect of bile salts may offer an adequate explanation for the loss of ureteral tone in pregnant women. An acceptable basis for the interpretation of such phenomena is afforded by the recognized tendency of bile salts to lower surface tension. Abundant clinical evidence indicates that the upper and middle end of the ureter is more responsive to adrenalin than the lower end. On the other hand the rather transient stimulating effect of pituitrin is more marked on the lower end of the ureter. Therefore it may be inferred that the administration of adrenalin constitutes a rational procedure in the treatment of pyelitis in pregnancy. Evidence is at hand as to the value of pituitrin for this condition. However further experience is necessary to determine which of the two hormone principles is the more effective.

ALICE F. MAXWELL, M.D.

**Duncan J. W. and Seng M. I.** Factors Predisposing to Pyelitis in Pregnancy. *Am. J. Obst. & Gynec.* 1928 xvi 357

During pregnancy physiological forces external to the ureter cause obstruction to ureteral and renal drainage. Dilatation of the right ureter is constant and by hydronephrosis on the right side is only slightly less common. The left ureter and renal pelvis escape this dilatation in a markedly higher percentage of cases but bilateral hydro ureter and by hydronephrosis are very frequent. These conditions occur earlier and more frequently and are more marked in multiparae than in primiparae. Stasis of the contents of the renal pelvis and ureter to empty themselves within the normal time limits is an almost constant finding in pregnant women and after delivery persists to a less marked degree for some time.

The demonstration of coliform organisms and an unexpected amount of pus in the bladder and kidney urine of supposedly healthy pregnant and puerperal women justifies the term "bacterial infection." The line of demarcation between the physiological and the pathological in these cases is a very fine one. The remaining factors necessary for the development of pyelitis are trauma and a decrease of immunity or resistance.

C. L. CORVELL, M.D.

**Loefer A.** Forty Five Cases of Pregnancy Toxemia. Acidosis—Treated with Insulin (45 Fälle von Schwangerschaftsintoxikation—Acidose—mit Insulin behandelt). *Zeitschrift f. Gynäk.* 1928. lv 403

The author's forty five cases of pregnancy toxemia which were treated with insulin included

thirty six cases of hyperemesis four of pregnancy dermatoses and five of eclampsia and eclampsia. The cases of hyperemesis were divided clinically into three groups. The eighteen cases of the first group were relatively easy to influence therapeutically. First a few pieces of loaf sugar were given and half an hour later 5 units of insulin were administered with fruit juice. The dose of insulin was gradually increased to 15 units twice a day. There were no failures in spite of the fact that throughout the treatment the patient was allowed to be up and about.

In the ten cases of the second group everything that was taken by mouth was vomited. Therefore the sugar was given by rectum. Half an hour later 10 units of insulin were administered. At the end of eight days the patient's condition was so much improved that the sugar could be given by mouth. By continuing the treatment for at least three weeks it was possible to prevent recurrences in every case. The dosage never exceeded 40 units of insulin with 3 or 4 gm. of glucose per unit.

The third group included cases of uncontrollable vomiting with considerable loss of weight and very poor general condition. In these glucose and insulin were given intravenously in amounts of about 30 units. There were two failures which are described in detail.

In the cases of eclampsia the action of insulin therapy was rapid and certain as the author had demonstrated previously. Although he frequently gave insulin alone which in mild cases of eclampsia is sufficient to increase the glycogen content of the liver he usually recommends the simultaneous administration of glucose (from 1 to 2 gm. per unit).

KESSLER (G)

**Berman S.** The Phenoltetrachlorophthalein Test of Liver Function in the Late Toxemias of Pregnancy. *Am J Obst & Gynec* 1928 xvi 410.

Berman has tried to differentiate hepatic from renal toxemia by using the phenoltetrachlorophthalein test of liver function. The dye was injected intravenously 0.5 mgm. being used per kilogram of body weight. Blood was then withdrawn and allowed to stand until it clotted the serum was alkalinized with 5 per cent sodium hydroxide and the resulting colors were compared with standards.

In normal pregnancy from 3 to 5 per cent of the dye was recovered in fifteen minutes from a trace to 1 per cent at the end of an hour and from nothing to a trace at the end of two hours. The upper limit of the normal may be considered 7 per cent after fifteen minutes 3 per cent at the end of an hour and a slight trace at the end of two hours.

The test had been used in 118 cases. Retention occurred in 34. Of the 34 patients with retention 9 died and of the 84 without retention 3 died. Convulsions occurred in 10 cases with and 10 cases without retention and in each of these groups there were 3 deaths. As far as could be determined none of these patients had had chronic nephritis.

The amount of dye retention was found to be no index of the severity of the disease and of no prognostic value. Although the study yielded interesting information it failed to offer suggestions regarding the management of cases of toxemia of pregnancy. The treatment and prognosis depend entirely on the clinical condition of the patient. The test does not differentiate the nephritic from the hepatic toxemia. In a follow up of the cases reviewed it was found that uncomplicated subsequent pregnancies had occurred in each group. E. L. CORNELL, M.D.

## LABOR AND ITS COMPLICATIONS

**Ponomareff A.** Caesarean Operations in Russia 1756-1924 (*Opérations césariennes en Russie 1756-1924*). *Gynec et Obst* 1928 xvi 11-103.

This article is a resume of the history of caesarean section in Russia presented with numerous statistical tables.

The first successful caesarean section was performed by Erasmus of Perno in 1756 and the second by Sommer of Riga in 1796. In 1810 Sommer's patient was operated upon a second time for rupture of the uterus. This is the extent of the eighteenth century statistics.

In 1874 Stolz introduced suture of the uterine wound. In 1877 antiseptics was applied to the operation by Novitsky who washed out the uterine cavity with salicylic acid solution and closed the uterus with sutures impregnated with phenol. Antiseptics did not enter into general practice until 1881. Up to that time 20 operations had been performed with 17 maternal deaths.

The antiseptic era lasted until 1890. During this time the diagnosis management and operative technique made great progress. The introduction of asepsis about 1890 placed the caesarean operation on its modern basis.

The ten year period of antiseptics saw the introduction of catgut sutures and the elastic tourniquet. Sixty one operations were performed with 30 deaths a mortality of 49.3 per cent as compared with the former mortality of 83 per cent. The conditions of Russian life being considered these figures are to be regarded as quite good.

After the introduction of asepsis the operative indications were gradually increased. In the period from 1891 to 1900 the number of operations doubled and many operations were performed for relative indications. At the same time the conservative caesarean section of Sanger and sterilization of the patient became more widely practiced. Sanger's operation was performed 94 times with a mortality of 17 per cent and Laro's operation 28 times with a mortality of 21 per cent.

In the twentieth century there has been further progress due in considerable part to the establishment of hospitals and obstetrical centers. The year 1908 saw the introduction of the extraperitoneal and vaginal method which for certain indications competed with the transperitoneal operation.



In the period from 1901 to 1924 803 operations were performed with a total mortality of 7 per cent. This relatively high figure is explained by the fact that the operation must often be performed on patients who have been long neglected or who have been examined by midwives without the slightest knowledge of asepsis. Nearly a third of the patients were operated upon after rupture of the membranes. In this group the mortality was 22 per cent.

ALBERT F. DE GROOT M.D.

Heldler H. and Steinhardt B. Is Manual Extraction of the Placenta a Very Dangerous Procedure? (Es la extracción manual de placenta la intervención obstétrica más peligrosa?) *Rev. argent. de obst. y ginec.* 1923 xii 63.

As a result of much experience the authors conclude that manual extraction of the placenta constitutes a serious procedure. It should never be attempted until the strictest indications have been established. Its danger is greatly increased by delay. It should be practiced only with the most perfect technique and under the most rigid asepsis.

In a series of collected cases the mortality was 46 per cent. This high figure is ascribed to ignorance of the danger involved, delay of the operation to suit the surgeon's convenience, and sepsis.

WILLIAM R. MEERER M.D.

Job. Acute Postpartum Dilatation of the Stomach (Dilatation a. u. de l'estomac après un accouchement) *Bull. Soc. d'obst. et de gynec. de Par.* 1923 xvii 630.

The case reported was that of a para in thirty-four years of age who gave birth spontaneously to a dead infant. The cause of the fetal death was not determined. When the placenta was expressed two hours after delivery the patient complained of pain in the right side of the abdomen. Thirty-six hours later the physician was informed that she had been vomiting almost continuously since delivery. The abdomen was then greatly distended and very painful. No gas or feces had passed and only a little urine had been voided. The temperature was normal and the pulse 110. A consultant who was called noted that the distention was most marked in the upper left quadrant of the abdomen and advised lavage of the stomach.

The evacuation of large quantities of fluid and gas was quickly followed by improvement in the general condition. Complete recovery resulted in a few days.

ALBERT F. DE GROOT M.D.

## PUERPERIUM AND ITS COMPLICATIONS

Finley P. Puerperal Infection. *Ohio St. J.* 1923 xxiv 773.

The author states that resistance to postpartum infection depends upon (1) the protecting zone of round cells in the decidua, (2) the infiltration of the uterine wall with phagocytes, (3) the Hofbauer macrophages of the parametrium, (4) the reticulo-

endothelial system, and (5) the defense qualities of the blood.

All conditions which prolong labor necessitate repeated vaginal examinations and manual or instrumental interference or cause retention of the lochia will increase the mortality and morbidity rate.

The gonococcus is responsible for from 5 to 10 per cent of cases of puerperal sepsis.

The curette and the intra uterine douche have no place in the treatment of puerperal sepsis. Placental remains should be removed cautiously with placental forceps or the finger. Hysterectomy should be performed only for sloughing fibroids or ruptured uterus. When done by experts ligation of the pelvic veins has resulted in recovery in 50 per cent of cases of sepsis. Immune blood transfusion is a valuable remedy.

Recovery rarely ensues when more than fifty bacteria are found to the cubic centimeter of blood. When the number of bacteria increases in spite of treatment the prognosis is exceedingly grave. The longer the patient lives the better her chance of recovery.

ALBERT W. HOLMAN M.D.

Young J. Maternal Mortality from Puerperal Sepsis. An Analysis of the Factors of Contagion, Trauma and Auto Infection. *Ed. ab. 144 M. J.* 1923 xxv Edinburgh Obst. Soc. 138.

The total maternal mortality in England and Wales in 1926 was 5.14 and the sepsis rate 1.6 per 1,000 live births. This shows that septic infection is by far the most important cause of maternal deaths. It is of importance also in chronic morbidity. About 60 per cent of hospital gynecological cases are due to childbearing, and many of these are the result of infection.

The causes of puerperal infection are contagion, trauma and auto infection. Auto infection is dependent upon virulent micro organisms present locally or in more or less distant foci. It is shown by statistics that this type is a minor primary cause of fatal puerperal sepsis. The bacteria normally present in the genitalia are not frequently the causative agents but are believed occasionally to assume pathogenic properties especially after trauma and devitalization of the tissues.

Epidemic infection in hospital is best prevented by the early isolation of suspected cases in a separate building. By scrupulous modern methods the danger of contact infection can be practically eliminated.

The fact that the maternal death rate has been little decreased over a period of one hundred years in spite of methods for asepsis has been ascribed to too great recourse to instrumental delivery. It is argued that whereas a century ago forceps were employed in only 1 in every 472 cases they are used today much more frequently. The conclusion is drawn that the trauma contingent upon instrumentation is the factor offsetting the advantage gained by other modern methods. The author recognizes the dangers of too frequent or careless instrumentation but suggests that the more frequent use of instruments at

the present time may be justified by the lessened fitness of women for childbearing.

It is admitted that trauma is the most important cause of deaths from sepsis. For this however the medical attendant is not entirely responsible. For the reduction of maternal mortality improvement in maternity practice based on a midwife doctor combination is necessary. The physiological management of labor should be encouraged and the abnormal cases seen early by physicians with special training.  
(GODFRICH C. SCHAUTTER, M.D.)

### NEWBORN

Sielsforth T. The Fate of Children Born Prematurely (Das Schicksal fruehgeborener Kinder) *Zentralbl f Gynaek* 1928 lu 133

In an investigation of the fate of children born prematurely in an obstetrical hospital the author found that all of those which weighed less than 1200 gm at the time of birth died during the first ten days after delivery. With an increase in the weight at birth the mortality decreased considerably since of the infants weighing from 2000 to 2200 gm only 11.8 per cent died during the first ten days.

Of a total of 51 infants born with a maximum weight of 2200 gm, 78 (31 per cent) died in the hospital and 173 (69 per cent) were discharged in good condition. The smallest child which has now been under observation for six and three fourths years weighed 1380 gm and was 40 cm long at birth and was born after a gestation period of two hundred and thirteen days. When last examined it weighed 35 kgm, measured 118 meters in length, and was very well developed both mentally and physically.

Information was obtained also with regard to 10% of the 173 infants that were discharged from the hospital in good condition. Twenty five of these have died. Seven died in the first month after their discharge, 12 died in the first year of life from general weakness or gastric and duodenal catarrh, 2 died in the second year and 3 in the third year of life from pneumonia, and one died at the age of four and a half years from meningitis. Twenty three of the survivors were examined subsequently and reports regarding 10 were received by mail.

The author concludes that the mortality of children born underweight who have passed the first year of life is not much greater than that of children born at term since of 80 prematurely born children who passed the first year of life, 4 (5 per cent) are still alive.

Sielsforth found also that the majority of prematurely born children had made up the loss in height and weight by the time they were five or six years old.

In general no defect in intelligence was demonstrable in the prematurely born children who were

followed up. One child which was born spontaneously with a weight of 2000 gm and a length of 46 cm developed Little's disease in the fourth month of life. The author believes that the subsequent occurrence of disturbances of the central nervous system in prematurely born children is not as frequent as is assumed by neurologists and psychiatrists.  
HANES (G)

### MISCELLANEOUS

Dogliotti V. Roentgen Study of the Bladder in Obstetrics and Gynecology (L'utero con tributo allo studio radiologico della vescica in ostetricia e ginecologia) *Riv ital di ginec* 1928 vii 525

The author has used three methods of studying the bladder roentgenologically: the ordinary method with an opaque medium, the combined method of Vallebona and cystorontgenography. In the combined method the injection of from 20 to 30 cc of barium sulphate into the bladder is followed by the insufflation of from 100 to 300 cc of air. Before the roentgenogram is taken the patient is made to assume various positions so that the opaque medium will be spread in a thin layer over the mucous membrane. This method instead of showing merely the outline of the bladder reveals the entire depth of the organ so that any body projecting from its walls is demonstrated.

A number of roentgenograms of the bladders of normal and pregnant women are presented. The bladder undergoes changes in form and position during pregnancy that in general increase in degree with the duration of the pregnancy. However these changes are not constant. In most cases the bladder in pregnancy is semilunar or bowl shaped. The form of the bladder varies also in gynecological diseases. In cases of fibroma the changes are typical and similar morphologically to those associated with pregnancy. Inflammatory processes of the uterus and adnexa generally do not cause changes in the bladder picture.

Olivia has reported that in gynecological operations he has often found the bladder in such a high position that operation was difficult. The author never obtained roentgenograms showing the bladder in a very much higher position than normal. This was probably due to the fact that the women he examined did not have the perineoplastic or perivisceral inflammations which were evidently the cause of the disease in the operative cases.

Dogliotti often found the ordinary method of filling the bladder with opaque medium sufficient as in many of his cases there was considerable deformity of the bladder. In cases in which the changes are only slight the combined method has proved superior to the ordinary technique.

ANDREA M. ROCA, M.D.

# GENITO URINARY SURGERY

## ADRENAL KIDNEY, AND URETER

Moore R A The Circulation of the Normal Human Kidney *Br J Urol* 1928 vi 51

Following a brief review of the literature on the circulation of the human kidney the author describes the technique by which this circulation has been studied and gives some of his own observations

He says that the portion of kidney drained by a papilla is the vascular unit of the kidney All vessels of the kidney from the renal artery itself to and including the afferent vessels of the glomeruli are of the type of arteries which do not anastomose with adjacent vessels to the extent of preventing an ischaemic necrosis of the tissue beyond in case they are occluded The vas efferens of a glomerulus is distributed in general to the tubules of that glomerulus All blood entering the kidney except that distributed to the hilus structures and possibly a few small vessels to the cortex passes through a glomerulus before entering the peritubular plexus or the arteriole recta Hence the kidney circulation is primarily a glomerular circulation

The arteriole recta have a double origin in part from the vas efferens of the border zone glomeruli and in part as a continuation of the vessels of the pars radiata Under no circumstances has an arteriole recta been seen arising from a vessel containing blood which has not previously passed through a glomerulus There are no direct connections between the arteries and veins The arcuate arteries of one unit do not anastomose with the arcuate arteries of the adjoining vascular units In some human kidneys there are direct branches of the arcuate arteries which pass through the cortex to the perinephric tissue JOHN G CHEETHAM M D

Davis J E The Surgical Pathology of Malformations in the Kidneys and Ureters *J Urol* 1928 xx 283

The author has made a study of twenty two cases of bilateral polycystic kidney In eight cases multiple deformities other than those of the kidneys were present The youngest patient was twenty two years of age and the oldest sixty five years Three patients were blood relatives and stated that a diagnosis of congenital bilateral polycystic kidney had been made also in the cases of other members of their families In one case subjective symptoms were noted from early childhood to the time of death at the age of thirty two years

Davis draws the following conclusions from this investigation

1 Inherited protoplasmic insufficiency is specifically expressed by complete differentiation in nephron and their surrounding stroma

2 The protoplasmic insufficiency is manifested chiefly by delayed differentiation

3 The morphological evidence of this structural delay is identical at all ages

4 The histological diagnosis is made by recognising mesenchymal stroma in which nephron units are in different stages of delayed differentiation The subcapsular zone gives the earliest evidence of both developmental delay and cystic degeneration in kidneys liver or other organs

5 The growth impulse differentiation and cystic degeneration are not identically timed in both kidneys nor in the different parts of organs involved

THOMAS F FLETCHER M D

Willan R J A Giant Renal Calculus with Epithelioma in a Horseshoe Kidney *Br J Surg* 1928 xvi 317

The case reported was that of a man fifty-six years of age who was admitted to the hospital complaining of severe pain in the right ilio-costal space discoloration of the urine increased frequency of micturition and loss of weight and giving a history of painful haematuria for three days in May 1926

On physical examination a swelling was visible to the right of the umbilicus and on palpation a hard smooth swelling the size of a hen's egg which did not move with respiration was felt behind the rectus muscle at the level of the umbilicus In the area of the palpable swelling X ray examination showed a large dense shadow Nothing else of importance was noted The findings of pyelography were not suggestive of horseshoe kidney The function of the opposite kidney was good

Operation revealed a horseshoe kidney containing in its right pelvis a large calculus purulent debris and clotted blood The calculus weighed 4 oz 80 gr The patient died the day after the operation of sudden cardiac failure

The specimen shows fusion of the lower poles of the horseshoe kidney The relation of the kidney to the aorta inferior vena cava renal vessels and left ureter has been preserved The front view of the specimen shows a normal looking left pelvis and ureter The anterior part of the right pelvis with the ureter has been removed Both ureters lie in front of the bridge of renal tissue In the right pelvis there is a necrotic mass of growth which extends into the upper part of the right kidney substance and up behind the inferior vena cava A large malignant aortic gland is seen in anterior relation to the larger vessels The posterior view of the specimen shows the large vessels laid open The malignant growth involves the aortic lymph glands and the right suprarenal capsule More minute inspection of the specimen reveals an early stage of acute pyelitis in

the left half of the horseshoe kidney. Microsection shows a definite carcinomatous condition infiltrating the kidney substance from the pelvis. The cells are epithelial and of the transitional or squamous type.

MAURICE I. MELTZER, M.D.

**Scholefield B. G. Renal Tuberculosis. The Healing of Tuberculous Nephrectomy Wounds. *J. Urol.* 1928 xx 345**

Following nephrectomy for renal tuberculosis not more than 40 per cent of wounds heal by primary intention. In the remaining cases either a sinus persists for many months or the wound breaks down completely and requires secondary suture. In the author's cases sinuses were more common in those in which at operation the kidneys appeared very little diseased than in those in which extensive caseation was present. The wounds were drained at operation only when they were thought to be contaminated. Involvement of the ureter or of the perinephric fat seemed to have no bearing on the healing of the wound.

The average period during which symptoms had been present was twenty-eight and six tenths months in the cases which healed, as against sixteen and three tenths months in those in which sinuses developed. Therefore the more acute the process the greater the likelihood of sinus formation. The previous and postoperative histories of the cases indicated that low resistance of the patient to tuberculosis was the most important factor.

The author suggests that the sinuses are due not to the continuation of an existing infection but to the development of a new tuberculous process in the traumatized tissues of a patient with lowered resistance. If this supposition is correct improvement in the results is more likely to come from a study of the patient's general health before and after operation than from any elaboration of operative technique.

C. TRAVERS STEPHEN, M.D.

**MacDonald S. Teratoma of the Kidney. *Proc. Roy. Soc. Med. Lond.* 1928 xxi 1893**

The teratoma reported was a hard, solid, irregular, rounded tumor 12 by 10 by 11 cm., weighing 650 gm., and occupying the upper two-thirds of a hydronephrotic kidney, the pelvis of which contained a stone. The cut surface failed to show any normal kidney. Localized hemorrhages had occurred. A tough white tissue supported areas that were cream-colored, opaque, and friable. Microscopically, the bulk of the tissue consisted of interlacing bundles of leiomyomatous cells which in some areas were very similar in histological appearance to those of a myoma of the uterus but in other areas which corresponded roughly to the cream-colored friable areas of the macroscopic description were more loosely and less regularly disposed and more polymorphous and neoplastic in character. The myomatous tissue was roughly partitioned into lobules by septa sinking in from the fibrocellular capsule. Embryonal tubules occurred in these

septa and also among the myomatous cells. They were lined with short cubical epithelium and supported by a meager scaffolding of fibrous tissue. They usually showed a well-defined lumen. Their number at any one point was never large; the myosarcomatous tissue composing most of the tumor. Remnants of the ruined kidney were distributed around the periphery of the tumor.

The patient, a man fifty years of age, lived four months after the operation. From the age of eleven years to the age of twenty-four years he had suffered attacks of pain in the left loin and passed discolored urine. After an interval of freedom from symptoms he again had frequent attacks of pain and occasionally voided a few small clots.

Autopsy showed a large recurrence occupying the bed of the left kidney. It had spread upward behind the peritoneum to form large, soft white masses burying the pancreas and pushing the liver forward. Above the diaphragm the posterior mediastinum and right thorax were filled with the growth to about one-third of their extent. True metastases were few. A metastasis of large size was noted in the middle of the left lobe of the liver and a small one in the manubrium. A few nodules of growth occurred within the peritoneum attached to the omentum and coils of intestine in the neighborhood of the local recurrence in the left renal pouch. The right kidney, the inferior vena cava, and the pelvic viscera were uninvolved.

MAURICE I. MELTZER, M.D.

**Lower W. E. and Belcher G. W. Conservative Kidney Surgery. *Am. J. Surg.* 1928 v 191**

Lower and Belcher state that with increased preoperative knowledge of the problems presented by pathological conditions of the kidney, renal surgery is becoming more conservative.

In the presence of pyelonephritis, infected hydronephrosis, and ureteral obstruction, surgical intervention has been replaced either completely or in part by the use of the ureteral catheter.

In a case of moderate hydronephrosis, ureteral dilatation and kidney lavage removed the infection and reduced the retention. When the patient was last heard from almost three years later, he was apparently quite well.

Nephrotomy is now generally avoided if the condition can be treated effectively by pyelotomy.

In the removal of a large stone through a pyelotomy incision, the ureter may be accidentally torn loose from its attachment to the renal pelvis. If this occurs, anastomosis should be performed. In no instance has there been any serious after-effect from this procedure.

An attempt should be made in all purulent cases to reduce the infection as much as possible before operating, especially if a nephrotomy is to be done later. In some cases, such as those with a large infected hydronephrosis and little remaining renal tissue in which a secondary nephrectomy is to be performed and those in which there is moderately good renal function and the emergency operation is

precipitated by ureteral obstruction rather than by extensive infection in the renal cortex the infected kidney may be drained satisfactorily by pyelostomy.

In the authors' opinion it is inadvisable to deliver the kidney through the wound for the removal of a calculus from the pelvis since in most instances it is possible successfully and safely to carry the operation to the kidney. Even when the stone lies in the tip of a long calyx it is probably better if the size of the stone permits to do a nephrotomy without delivering the kidney.

It has been shown that while a half of one kidney is quite sufficient to maintain life such limitation in the amount of kidney tissue is a serious handicap. When the removal of one kidney and half of the other is necessary the complete nephrectomy should be performed first so that the kidney to be resected can receive the benefit of compensatory hypertrophy before its diseased half is resected.

In conclusion Lower and Belcher say that renal surgery has gone through a number of phases. At first it was quite conservative. Later it became radical and now it is again becoming conservative. The authors believe that the treatment of renal lesions should be conservative whenever possible. In support of this view they cite the results obtained in a number of cases in which the only treatment was ligation of the accessory vessel obstructing the ureter. Two of the patients are entirely well sixteen and nineteen years respectively after the operation. Cases in which the removal of part of a kidney is done constitute the most radical test of conservatism. Partial resection should be performed only after very careful consideration of all of the findings in the case. In all cases in which the amount of kidney tissue is subnormal because of disease or operation it is essential that the patient follow a rigid routine.

LOUIS GROSS, M.D.

Braasch W F Stricture of the Ureter *J Am M Ass* 1928 vol 1263

The incidence and the significance of pathological involvement of the ureter have not been generally appreciated until within the last few years. Stricture of the ureter occurs more frequently than has been recognized but not as frequently as some observers are inclined to believe.

Recent contributions concerning lesions of the ureter fail to give an accurate idea of the incidence of stricture as reported clinically. To determine this incidence a detailed examination of the ureters in at least 1,000 autopsies in a general hospital will be necessary. The existence of so called wide stricture is not substantiated by pathological evidence.

Subjective symptoms and abdominal palpation are misleading and quite inadequate for the diagnosis of ureteral stricture. Because of anatomical variations in the caliber of the ureter the bulk method of diagnosis is quite unreliable. Urography is the best method of diagnosing stricture but a urographic examination requires experience in interpretation and an accurate technique.

Dilating the ureter in cases in which there is definite evidence of a non-tuberculous stricture is a justifiable procedure and frequently gives excellent results. Atomic dilatation of the ureter is more common and of much greater clinical significance than has been recognized. It is usually not benefited by dilatation.

Spasm of the ureter frequently offers a logical explanation of obscure symptoms referable to the urinary tract. It usually occurs in patients who are suffering from functional disturbances without an apparent organic basis.

Instrumental dilatation when employed in the treatment of ureteral spasm or as a counter-irritant should be regarded as a method of physical therapy. Repeated and long continued dilatations of the ureter particularly when the urogram does not show evidence of abnormality is to be deplored.

## BLADDER URETHRA AND PENIS

Hirsch E W The Relation of Bladder Pressure to Bladder Function *J Am M Ass* 1928 vol 11

Rapid complete evacuation of urine from the over-distended bladder may be followed by renal and circulatory shock. The work of van Zwalenburg, Foulds, Shaw and Young, Cunningham, Bump, Campbell and Scott has demonstrated the advisability of reducing residual urine with care. Campbell concluded that the withdrawal of the first 100 c.c.m. is the danger point. Important work in bladder pressure has been done by Schwarz, Maso and Pellacani, Elliott, Muller and Rose.

The extrinsic factor of respiration must be considered. Deep respiration and coughing will cause a rise in the bladder pressure. The changes in bladder pressure produced by sensory stimuli and psychic states are due to indirect stimulation of the respiratory center with temporary inhibition of respiration. The bladder contraction is due to the periodic intra-abdominal waves caused by contraction of the diaphragm secondary to respiration.

To observe the behavior of the bladder muscle under various conditions the author attached a catheter to a water manometer and recorded tracings on a smoked drum. Tracings of bladders artificially filled showed a slightly higher pressure than the cysts of bladders normally distended with urine. In the over-distended bladder the removal of 30 c.c.m. of urine caused a temporary drop of from 5 to 30 per cent. The removal of small amounts of urine often caused a rise in the pressure. The drop-by-drop method was found to be the safest and most satisfactory. By this method a continued drop in pressure was obtained and the rhythmic bladder waves were preserved.

In the study of bladder function the neck of the bladder must be taken into consideration. Pathological changes at the neck may cause hypertrophy with high pressure or inhibit the bladder muscle causing low pressure. In prostatitis the pressure is low even when the bladder is small while in hypertrophy with

a large amount of residual urine and thickening of the bladder wall the pressure is usually high

Hirsch is of the opinion that the chart presented by Muller in his discussion of the functional pollakiuria is incorrectly interpreted. He believes that the drop in pressure at 200 c cm is due to muscle fatigue

In conclusion the author states that determinations of the bladder pressure will aid in the diagnosis of functional and organic bladder lesions but must be only a part of the urological examination. They show the result and not the cause of the disease. When in bladder disturbances in women there is no evidence of a lesion in the urethra, bladder or central nervous system and the bladder pressure is normal the condition is probably due to a psychic disturbance

CLAUDE D. PICKRELL, M.D.

McClintic, C. F. The Clinical Neurophysiology of the Automatal Urinary Bladder and Enuresis. *J Urol* 1928 xx 267

The emptying mechanism of the bladder consists of a voluntary and involuntary mechanism the former controlled from the cerebrum and the latter from the spinal cord. This gives a physical basis for the explanation of certain cases of enuresis, incontinence and bladder involvements associated with cerebral disturbances, internal ear diseases, lesions of the corpus striatum, incontinence in imbeciles and idiots and other conditions.

When enuresis is due to hypothyroidism, thyroid extract may be used. When it is due to a decrease in irritability or hypotonicity of the musculature, pituitrin may be used. When it is due to a decrease in reflex irritability in the voluntary mechanism, cord centers, atropine may be used. Enuresis may be the result of loss of inhibition or local irritation. In the cases of little girls its cause may be an irritation of the glands clitoris. When it is due to loss of inhibition from cerebral causes, measures must be taken to improve the general health.

Incomplete transverse lesions due to cerebral tumors, cysts, aneurisms, eye strain, strabismus, arachnoiditis, circumscribed low mentality, lesions of the corpus striatum, mid brain lesions, cerebellar lesions, cysts, tumors, tabes and vestibular lesions (ear and canal) are never associated with an automatic bladder but are often responsible for incontinence, enuresis or retention. A complete transverse lesion due to cord tumors, injury to the cord, varicose veins of the cord, degenerative diseases of the cord or local arachnoiditis results in an automatic bladder. Local organic nerve lesions or irritation may cause a spastic bladder (so-called vagotomy), enuresis and incontinence.

C. TRAVIS SIERFFA, M.D.

Visher, J. W. Bilateral Vesical Diverticula at the Ureteral Orifices Visualized with Lipiodol. Report of a Case. *J Urol* 1928 xx 431

Ureters rarely empty into diverticula, hence this case report. The patient, a man twenty-nine years of age, had a supernumerary finger and toe re-

moved and had suffered two attacks of renal colic the last associated with the passage of a small calculus.

Physical examination revealed chronic prostatitis, osteoarthritis of the right sacro-iliac joint and bilateral flat foot. The urine was alkaline and contained a moderate number of pus cells. Forty per cent phenolsulphonephthalein was excreted in two hours. Roentgenography revealed several small stones in the region of the left kidney.

Meatotomy was performed to allow cystoscopy. At the site of the ureteral orifices two openings about 3 mm in diameter were found which suggested diverticula (longitudinal folds of the bladder mucosa). No ureteral openings were observed. When catheters were introduced into the openings and sodium bromide was injected, the catheters could be seen curled up in the diverticula. In the anterior urethra there were multiple strictures of large caliber.

At another examination 3 oz of residual urine were found. Following the intravenous injection of indigocarmine, meatoscopy revealed a small amount of the dye coming out of the diverticular openings. No other openings could be discovered. The catheters curled up in the diverticula, drained a rather deep blue urine. In a cystogram made after filling of the diverticula with lipiodol diluted with three parts of olive oil and filling of the bladder with air through another catheter, the diverticula were distinctly visible.

Visher has found lipiodol an excellent contrast medium for the visualization of diverticula in this location as it is much heavier than water and does not diffuse with water. He states that if the lipiodol is diluted as in the case reported, heated and injected with a small syringe through a rather large needle, its use is simple and non-irritating.

LOUIS NEUWELT, M.D.

Frater, K. A Study of Epithelial Neoplasms of the Urinary Bladder. *J Uol* 1928 xx 371

From a study of a series of cases of epithelial neoplasms of the urinary bladder, Frater draws the following conclusions:

1. The so-called benign papilloma should be classified as an epithelioma of low malignancy.
2. With few exceptions, malignancy does not increase with recurrence.
3. The grading of a specimen of a neoplasm of the bladder removed cystoscopically can be relied upon.
4. The specimen reported to be inflammatory tissue must be examined several times before the exclusion of malignancy is justifiable.
5. Epithelioma of bladder does not show a variation in the grade of malignancy in different parts of the same tumor.

Judd, E. S. and Thompson, H. L. Ectrophy of the Bladder Complicated by Carcinoma. *Arch S* 1928 xxv 641

Carcinoma is a rare complication of ectrophy of the bladder. The authors review 19 cases collected from the literature and report an additional case.

Although adenocarcinoma is of comparatively rare occurrence in the normally developed bladder it is the type of cancer most commonly associated with ectrophy of the bladder. Of 867 tumors of the normally developed bladder which were seen at the Mayo Clinic only 19 (2.19) were adenocarcinomata. Of the 19 carcinomata associated with ectrophy of the bladder reported in the literature 14 were adenocarcinomata and 2 were squamous cell carcinomata. In 3 cases no histological report was made.

The authors review the theories advanced as to the etiology of ectrophy of the bladder and discuss the embryology and histology of the bladder with special reference to the pathogenesis of adenocarcinoma complicating ectrophy of that organ.

No reports of cure following treatment were found in the literature. The cases of 2 patients treated at the Mayo Clinic who have remained well for three and six and a half years respectively since operation are reported in detail.

**Antonucci C.** Total Cystectomy in Women (De la cystectomie chez la femme cystectomie totale (large)) *J de chir* 1928 xxix 153

An original technique of total cystectomy for primary or secondary cancer of the bladder is described. The operation is based on the principles of Wertheim's hysterectomy and of Albertin's amputation of the rectum. The steps are described as follows:

1. A suprapubic incision is made with the patient in the Trendelenburg position.

2. The tubo-ovarian and round ligaments are sectioned and the ureters isolated as far as the uterine arteries and picked up in a loop for future identification. The uterine arteries are then ligated and cut.

3. The prevesicular peritoneum is incised and the bladder separated in the median line and on the sides by gauze dissection. The uterosacral ligaments are then sectioned to allow free mobilization of the uterus. The ureters are sectioned and the vesicular ends ligated.

4. The posterior vaginal wall is incised transversely and the upper lip grasped with a tenaculum. After ligation and section of the lateral vesical plexuses the vaginal incision is continued anteriorly well below the neoplasm the mass to be removed then being held only by the urethra.

5. The urethra is sectioned between two L clamps and the distal end ligated. Hemostasis is effected gauze is packed into the parametrium and brought out through the vagina and the pelvis is peritonized.

In the author's first case the ureters were brought out through the anterior abdominal wall and death resulted from uræmia. In his second case a preliminary lumbar ureterostomy was performed and proved more satisfactory. The author has found that patients will accept a ureterostomy as readily as a permanent colostomy.

ALBERT F. DeGROOT, M.D.

## GENITAL ORGANS

**Walker K.** The Diagnosis and Treatment of Sterility in the Male. *Brit M J* 1928 ix 65

Walker states that the spermatogenic function of the testis is far more sensitive to external influences than its function of internal secretion. He believes that the greatest progress in the study of male sterility will result from investigation of the effects of focal infection, endocrine disturbances and diet.

HENRY I. SAYFORD, M.D.

**Herrold R. D.** The Interpretation of Chronic Infections of the Prostate and Seminal Vesicles. *J Am M Ass* 1928 xci 557

Herrold states that although gonorrhea is usually a predisposing cause of chronic prostatitis and vesiculitis, the gonococci are usually displaced by other bacteria by the time these conditions have developed. Persons with a remote history of gonorrhea are as liable to have a hematogenous infection as those with a negative gonorrheal history. It is probable that in some cases the infection of the genitals is of the descending type in which direct extension is brought about by the urine. Occasionally mild non-gonorrheal urethritis may reach the prostate without causing definite posterior urethritis, but clinical evidence seems to indicate that many infections of the urethra and prostate are due to gonorrhea either latent or active. Obstructive changes in the urethra with resulting urinary disturbances or urethral discharge are often closely allied to a low grade infection of the prostate and seminal vesicles. A vicious circle is therefore established as each condition tends to aggravate the other. Other factors increasing virulence of the latent bacteria are sexual excess, exposure to wet and cold, extreme physical exertion and conditions outside the genito-urinary tract such as acute infections and chronic debilitating diseases. Stricture of the urethra developing years after an attack of gonorrhea may be explained by secondary stimulation of the foci of infection and the production of infiltration at the previously injured area. The action of the foci may be of an allergic nature.

Localized symptoms or referred pains (barkache) are often proved by the therapeutic test to be due to chronic prostatitis. That prostatitis and vesiculitis may be due to foci outside the genito-urinary tract is shown clinically by the improvement following removal or drainage of infected areas in the teeth, nose and throat. Other infectious conditions such as arthritis, eye lesions due to a systemic condition and sciatica are benefited or cured by treatment of the prostatic infection.

Finally there is the large group of so-called latent infections which are encountered frequently in postgonorrheal examination for determination of cure. The question arises whether they later may become active foci of localized infection in the prostate or of general systemic disease. The bacteriological and serological study reported by Her-

fold was made to determine the significance of this type of infection and to serve as an aid in the interpretation of active manifestations local or general of doubtful prostatic origin.

In twenty six cases of chronic infections of the prostate and vesicles repeated cultures showed the repeated predominance of the same type of bacteria in many instances. The identity of the organism in succeeding cultures was further corroborated several times by positive agglutination with the patient's serum and the bacteria isolated from the same patient at various times. The more common bacteria were the staphylococcus albus the diphtheroid group the streptococcus viridans the staphylococcus aureus the hemolytic streptococcus and the colon bacillus. Usually there was a mixture of two or more of these bacteria but pure cultures were also found.

Studies were made of the virulence of the prostatic fluids. The same bacteria often predominated in cultures repeated at various intervals. These predominating types were more often positive in the virulence tests than other bacteria. The groups of urethral flora in chronic prostatitis are frequently dependent upon the infection in the prostate and seminal vesicles. One or more types of bacteria isolated in cultures from the prostatic and seminal fluid are often agglutinated by the patient's serum. Prostatic fluids containing bacteria agglutinable by the patient's serum were more often lethal to mice when injected intraperitoneally than those containing strains non agglutinable with homologous sera. Skin tests with the supernatant broth of three day growths of the whole prostatic fluid inoculum seem to indicate that the fluid is producing the greatest amount of skin reacting substance are more likely to be lethal to mice when injected intraperitoneally.

The tentative results of the virulence tests indicate that further studies to attempt a more definite evaluation of focal infections at their source are worthwhile. It is probable that the value of autogenous vaccines may be increased if more care is used in the selection of the strains for the preparation of the vaccines so as to include the bacterial types agglutinated by the homologous sera.

LOUIS NEUWALT M.D.

Barringer R. S. Phases of the Pathology Diagnosis and Treatment of Carcinoma of the Prostate *J Urol* 1928 xx 437

Carcinoma of the prostate usually begins in the prostatic lobe. Its progress is upward into the body rather than downward toward the perineum. It usually metastasizes late.

The author is attempting to classify prostatic carcinoma according to their radiosensitivity. He believes that radiation should always be used prior to operation. An extensive major operation should be avoided when possible.

In conclusion Barringer states that an examination of the prostate should be included in all general physical examinations of men over sixty years of age.

LAMES HESS M.D.

Hirsch E. F. and Schmidt L. F. Small Carcinomata of the Prostate Gland *J Urol* 1928 xx 387

The authors review eleven cases of small carcinoma of the prostate with the findings of histological examination. The results in these cases emphasize the importance of making a microscopic examination of tissue from many areas of prostate glands removed with the clinical diagnosis of benign enlargement in order that small malignant growths may not escape notice.

ELMER HESS M.D.

Campbell M. F. Spermatocoele *J Urol* 1928 xx 435

There are various theories regarding spermatocoele formation. Virchow first pointed out that pathologically spermatocoeles are true retention cysts and Kocher showed that the vasa efferentia are the usual site of spermatocoele formation.

Anatomically spermatocoeles are extravaginal or intravaginal. The extravaginal type which are the most common usually arise behind the testicle between the testicle and the epididymis and develop outside the tunica vaginalis envelope. When they spring from the vasa efferentia or the superior vas aberrans the rete testis is the site of insertion. They push the testicle downward and forward. They may become lobular because of constricting circular fibrous bands and may attain great size. Cysts developing in the cord from the parpididymis or vas deferens itself are rare and are characteristically pyriform and single.

The intravaginal spermatocoele springs from some part of the epididymis develops within the tunica vaginalis and may rupture into a surrounding hydrocele with a discharge of spermatozoa. The cyst may be about the size of a testicle. The most frequent site of origin of the intravaginal spermatocoele is the canal of the epididymis or the sessile hydrocele.

Histologically the cyst wall is composed of interlacing connective tissue fibers interspersed with smooth muscle strands. The cavity is lined by cubical or cylindrical epithelium if it is recent and by flat pavement epithelium if it is old.

Spermatocoele fluid is usually opalescent and milky because of its seminal elements. On standing it separates into two layers a clear layer above and a whitish layer below. Microscopic examination reveals myriads of lymphocytes fat globules epithelial cells and spermatozoa. If the cyst communicates with the seminiferous tubules the spermatozoa will be active if it does not the spermatozoa will be dead. The fluid is neutral or only feebly alkaline in reaction and differs from hydrocele fluid in its lighter specific gravity and its low content of solids and albumin.

Spermatocoeles are most common in men between the twenty fifth and fiftieth years of age. They are rare in old or young adults. Since they cause little inconvenience their duration varies. The symptoms are chiefly those of a growing mass at the top of the



testicle with a dragging sensation in the penis testicle and cord. Dislocation of the testicle may occur. It may be induced on erection and may be intermittent. It is rare after intercourse. Neoplasia may be suggested but these cystic tumors grow slowly and are not so hard as carcinoma. Nor should they suggest tuberculous epididymitis. Fluctuation is commonly noted. Transillumination offers little aid in the diagnosis. Relatively dense milky fluid is often translucent. In many cases aspiration alone will differentiate spermatocele from hydrocele, hæmatocele and chylocele.

Aspiration of spermatoceles will check the diagnosis but will not cure. Excision of the cyst sac is the indicated treatment. This is easily done under local anæsthesia. Partial epididymectomy was performed in thirteen cases and complete removal was done in one case. Any portion of the cyst wall which cannot be removed should be destroyed by cauterization. Phenol serves admirably. After closing the wound without drainage the author applies the Bellevue scrotal compression bandage which prevents oozing and hæmatocele formation and affords ample support and complete immobilization with compression. The patient is kept in bed for from five to seven days. Postoperative complications are few. The most common complication is scrotal bleeding with infection. **LOUIS NEUGART M.D.**

# MISCELLANEOUS

Wesson M. B. Pitfalls in Urography. *J. Urol.* 1928 xx 355

The correct interpretation of pyelograms is at times difficult. While overdistention of the pelvis may cause discomfort, incomplete filling of the pelvis may cause an error in diagnosis.

Wesson prefers the gravity method to the syringe. Unless it is contra indicated by a low phthalein output he makes bilateral pyelograms. He doubts if the cases of anuria reported following bilateral pyelography are due to the effect of the pyelographic examination and cites two cases which show that ureteral manipulation without pyelography may cause anuria.

Seven cases demonstrating errors in urography are reported. In one a filling defect was caused by an organized blood clot. In another there was insufficient gravity pressure. In a third the tip of the catheter in a calyx with its eyes plugged was diagnosed as a tumor. In three cases of stones with different densities—two of gall stones and one of kidney stone—the diagnosis was doubtful. In the seventh case a cancer of the bladder disappeared under deep therapy but autopsy showed an adenocarcinoma of the rectum with marked invasion of the bladder wall. **CLAUDE D. PICKERILL, M.D.**

# SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

## CONDITIONS OF THE BONES JOINTS MUSCLES TENDONS ETC

Griffith A S The Types of Tubercle Bacilli in Human Bone and Joint Tuberculosis *J Path & Bacteriol* 1928 xxv 875

This article which deals solely with the results of English studies is divided into five sections

1 A summary of four published series of cases  
2 A detailed account of the results in a fifth series This investigation was begun in 1921 and extended into 1925 The series included 147 cases The original material was for the most part pus aspirated from abscesses From 133 of the 146 cases cultures of tubercle bacilli were obtained either directly from the original material or from a guinea pig inoculated with it The cultures were classified first according to the cultural characteristics If the strain proved eugonic the virulence test on rabbits was usually omitted All dysgonic cultures were tested on rabbits and some of them on guinea pigs

3 Statistics—a summary of the 5 series of cases and an analysis of all bone and joint cases

4 A discussion of the relative frequency of human and bovine infections in different bones and joints

5 A discussion of the portals of entry of tubercle bacilli in bone and joint tuberculosis

In summarizing the author states that tubercle bacilli have been isolated from 598 cases of bone and joint tuberculosis and their type has been determined In persons under twenty three years of age bovine bacilli were found in 20 per cent in children under five years of age in 33 per cent and in children between five and ten years of age in 24 per cent They were not found in any patients over twenty three years of age

Bovine bacilli appear to account for a larger proportion of cases of tuberculosis of the spine than of cases of tuberculosis of other commonly affected bones and joints

Bone and joint tuberculosis may be the result of respiratory or alimentary infection

ROBERT C LOVERGYN MD

Phemister D B Unusual Forms of Osteomyelitis *North Am Med* 1928 xxv 460

Unusual forms of osteomyelitis may result from variation in the age type and virulence of the micro-organism the bone affected and the site of involvement of the particular bone

Osteomyelitis usually occurs at a point in bone where the circulation and growth are most active

Sclerosing osteomyelitis occurs when the infection spreads more or less diffusely in a large segment of bone without producing sequestration In such cases

it may be difficult to differentiate from other inflammatory processes particularly lues

Localized osteomyelitis is most frequently confined to the metaphysis of a large bone It begins acutely with fever localized pain and swelling A cavity is rapidly formed which is filled with pus If the cavity does not rupture the condition passes into a chronic stage with exacerbations of the infection Operation is necessary for the eradication of the foci The foci are commonly called Brodie's abscesses although this name conveys a false conception of their nature

Non suppurative or fibrous osteitis is an inflammatory process in bone characterized by the marked production of fibroblasts and bone absorption and usually slight exudation Bacteria have not been demonstrated with sufficient certainty and regularity in these benign giant cell tumors or bone cysts to prove that they are the exciting cause

The author calls attention to a group of chronic non suppurative localized inflammations of the bone These lesions may be subperiosteal or endosteal or occur in the cancellous bone of the end of the shaft They pursue a subacute or chronic course and produce a small area of bone destruction The cavity is filled with a soft brownish or grayish tissue without leucocytes or lymphocytes The symptoms are pain and tenderness which are mild at the onset and gradually become more severe Hemister has seen seven cases The condition responds readily to saucerization

Bone cysts may occur as solitary lesions or as part of a multiple fibrocystic disease The solitary lesions are seen usually during the period of growth Many theories have been advanced to explain these lesions but the author thinks that a micro organism is the exciting factor He has reported two cases in which a green producing streptococcus was found The fact that sarcoma develops from benign giant cell tumors in exceptional cases is evidence in favor of the view that the lesion is a benign neoplasm rather than an inflammatory process

ROBERT V PLANTON MD

Evans W A and Leucutia T The Value of Roentgen Ray Therapy in Primary Malignant Tumors and Benign Giant Cell Tumor of Bone *Am J Roentgenol* 1928 xx 303

The authors first present the nomenclature and classification embracing all varieties of bone tumors which has been accepted by the Registry Committee of the American College of Surgeons They discuss the five year cures of primary malignant bone tumors recorded in the Registry and call attention to the fact that the cured cases were treated by amputation alone by amputation and toxins or by

testicle with a dragging sensation in the penis testicle and cord. Dislocation of the testicle may occur. It may be induced on erection and may be intermittent. It is rare after intercourse. Neoplasia may be suggested but these cystic tumors grow slowly and are not so hard as carcinoma. Nor should they suggest tuberculous epididymitis. Fluctuation is commonly noted. Transillumination offers little aid in the diagnosis. relatively dense milky fluid is often translucent. In many cases aspiration alone will differentiate spermatocele from hydrocele, hamatocele and chylocele.

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ROBERT C LOWENGA M D

Phemister D B Unusual Forms of Osteomyelitis North St Med 1928 xxvii 460

Unusual forms of osteomyelitis may result from variation in the age type and virulence of the micro organism the bone affected and the site of involvement of the particular bone

Osteomyelitis usually occurs at a point in bone where the circulation and growth are most active

Sclerosing osteomyelitis occurs when the infection spreads more or less diffusely in a large segment of bone without producing sequestration In such cases

it may be difficult to differentiate from other inflammatory processes particularly lues

Localized osteomyelitis is most frequently confined to the metaphysis of a large bone It begins acutely with fever localized pain and swelling A cavity is rapidly formed which is filled with pus If the cavity does not rupture the condition passes into a chronic stage with exacerbations of the infection Operation is necessary for the eradication of the foci The foci are commonly called Brodie's abscesses although this name conveys a false conception of their nature

Non suppurative or fibrous osteitis is an inflammatory process in bone characterized by the marked production of fibroblasts and bone absorption and usually slight exudation Bacteria have not been demonstrated with sufficient certainty and regularity in these benign giant cell tumors or bone cysts to prove that they are the exciting cause

The author calls attention to a group of chronic non suppurative localized inflammations of the bone These lesions may be subperiosteal or endosteal or occur in the cancellous bone of the end of the shaft They pursue a subacute or chronic course and produce a small area of bone destruction The cavity is filled with a soft brownish or grayish tissue without leucocytes or lymphocytes The symptoms are pain and tenderness which are mild at the onset and gradually become more severe Phemister has seen seven cases The condition responds readily to saucerization

Bone cysts may occur as solitary lesions or as part of a multiple fibrocystic disease The solitary lesions are seen usually during the period of growth Many theories have been advanced to explain these lesions but the author thinks that a micro organism is the exciting factor He has reported two cases in which a green producing streptococcus was found The fact that sarcoma develops from benign giant cell tumors in exceptional cases is evidence in favor of the view that the lesion is a benign neoplasm rather than an inflammatory process

ROBERT V FUNSTON M D

Evans W A and Leucuth T The Value of Roentgen Ray Therapy in Primary Malignant Tumors and Benign Giant Cell Tumor of Bone Am J Roentgenol 1928 xi 303

The authors first present the nomenclature and classification embracing all varieties of bone tumors which has been accepted by the Registry Committee of the American College of Surgeons They discuss the five year cures of primary malignant bone tumors recorded in the Registry and call attention to the fact that the cured cases were treated by amputation alone by amputation and toxins or by

amputation toxins and irradiation. Not one case was treated by irradiation alone or by amputation and irradiation without toxins.

In their opinion the explanation why irradiation in general and roentgen ray irradiation in particular fell into disrepute as therapeutic measures for a condition in which other methods strongly advocated have given equally, if not more unsatisfactory results is that irradiation therapy was until recently in the experimental stage and the doses administered were too small to produce an appreciable therapeutic effect. Since the introduction of the highly penetrating irradiation with larger well measured and more scientifically applied doses irradiation therapy especially in the form of deep roentgen ray therapy is becoming more and more prominent in the treatment of malignant bone lesions.

Five years have now elapsed since the authors first cases of bone tumor were treated by deep roentgen ray irradiation. The results obtained demonstrate that the roentgen ray is one of the most powerful agents at our disposal in the treatment of all varieties of primary malignant bone tumors as well as benign giant cell tumors. Five year cures are possible from roentgen irradiation therapy even in cases with extensive metastases and those in which no other methods can be of benefit. All of the cases reviewed were registered with the Registry of Bone Sarcoma of the American College of Surgeons and all of the diagnoses were those of the Registry Committee.

The authors discuss the relationship of the morphological structure of the tumor to the response which may be expected from irradiation and report the histories of cases of different types of tumors treated with photographs roentgenograms photomicrographs and appended summaries commenting on the results obtained by the roentgen therapy. The question of dosage in general, the reason for the variable response to treatment and the necessity for special dosages in individual cases are considered. The method of procedure used by the authors for various types of tumors is described in detail. The value of roentgen therapy in osteogenic sarcoma, Ewing's tumor, myeloma, periosteal fibrosarcoma, borderline tumors such as skeletal chondroma and myxoma and giant cell tumor is also given consideration.

Roentgen ray therapy of primary malignant bone tumors and of benign giant cell tumors is governed by the following rules which are based upon the primary influence of the roentgen rays on the highly complicated tumor tissues.

1. Cellular tumors without much stroma and rich in blood supply though chaotically and from the surgical viewpoint very malignant may be made to disappear entirely by irradiation.

2. Tumors of the adult type especially when rich in mature intercellular structures (cartilage bone) and poor in blood vessels may prove entirely refractory to irradiation but yield readily to surgical procedures.

3. In tumors of the intermediate type the more undifferentiated cells may be made to disappear and the growth of the more adult cells may be retarded by irradiation so that they produce an abundance of calcific (cartilaginous and osseous) intercellular substance. A marked sclerosis with considerable prolongation of life often results in such cases. In other instances postirradiation surgical measures are of distinct value.

From their results the authors conclude that the present standard methods of treating bone sarcoma and benign giant cell tumors should be completely revised. Irradiation in the form of deep roentgen ray therapy should find a more extensive application in all forms of bone sarcoma and giant cell tumor operable or inoperable whether combined with surgical measures mixed toxins or the more recent lead therapy and it remains for the Registry of Bone Sarcoma to collect more complete statistical evidence regarding the value of such a procedure. In conclusion the authors state that as the Registry has abundantly succeeded in establishing a standard nomenclature and standard criteria of classification, they are confident that it will now succeed in establishing more or less standard measures of therapeutics.

Wooten HARRIS MD

#### Keiffer V H. Unusual Types of Osteogenic Sarcoma. *Texas State J M* 1904 22: 40

The first tumor described by the author was a fusiform neoplasm which developed on the lower end of the shaft of the femur of a girl thirteen years of age. On section it presented no sign of bone, cartilage or calcium deposit. It was almost free of blood channels and was composed essentially of dense homogeneous fibrous tissue. The lower end of the shaft of the femur had been replaced by the tumor and the epiphysis was so infiltrated that it had lost its identity. Cellular elements which were comparatively few showed small inactive spindle-shaped nuclei.

The second specimen described was a centrally expanding tumor occupying the upper end of the tibial shaft and involving the epiphyseal line. It had grown rapidly and had been quite tender. X-ray examination had shown it to be a centrally rarefying tumor surrounded by a bone shell. In spite of the presence of the surrounding bone shell, a diagnosis of malignancy was made. The shell surrounded the tumor completely and on histological examination the neoplasm was seen to be composed of short spindle cells with resting nuclei, some of which showed recent division. Numerous large blood spaces which were present were lined with malignant cells.

The third specimen was a malignant bone aneurysm. Although gross examination revealed no resemblance of this tumor to fibrosarcoma the histology of the neoplasm was almost identical with that of fibrosarcoma except for a marked difference in the vascular supply. The tumor mass was composed largely of blood not enclosed in vessels but

lying in huge spaces imperfectly walled off by tumor tissue

The last specimen described appeared to be a benign giant cell tumor smoothly surrounded and separated from the soft parts by a thin but distinct bone shell covered by practically normal periosteum. Histologically the bony capsule showed imperfect plates of osseous tissue similar to those found on the periphery of the giant cell tumor and not neoplastic nor malignant. The tumor mass was soft and very friable and presented a considerable amount of blood clot. Many of the sections studied showed the typical findings of giant cell tumor while other sections showed areas which were definitely malignant with undifferentiated loose osteoblast like cells typical tumor blood spaces and attempts at bone formation.

Although osseous tissue is by no means a necessary feature of osteogenic sarcoma and not always characteristic when it is present its presence is as valuable in the diagnosis as a typical giant cell in tuberculosis.

ANTHONY I SAVA M D

**Key J A** The Cytology of the Synovial Fluid of Normal Joints *Anal Record* 1928 XI 193

The cellular constituents in the synovial fluids removed from the joints of men and laboratory animals were studied by a method of supravital staining. Regardless of their source the fluids were similar in the type and proportions of cells found. The cell count was usually between 175 and 25 per cubic millimeter during life and rose rapidly after death.

The cells of the macrophage series are the most important cellular constituents of normal synovial fluids. Eighty eight per cent of all nucleated cells found could be placed in this group which includes monocytes (58 per cent) elastomacrophages (15 per cent) indeterminate mononuclear phagocytes and primitive cells. The proportion is about the same as that found in connective tissue a fact which further supports the theory that the joint cavities are clefts in connective tissue and are incompletely lined by slightly modified connective tissue cells. The macrophage group are mature living cells whose function it is to remove waste or foreign material from the joint cavity. Red blood cells are normally present in synovial fluids together with leucocytes fat and tissue debris. Only a few detached synovial membrane cells were found while degenerating and cartilage cells were never seen. This indicates that friction of the joint surfaces is a negligible factor in determining the cellular constituents of the synovial fluid.

CHESTER C GUY M D

**Gibson A** The Etiology of Rheumatoid Arthritis *J Bone & Joint Surg* 1928 X 747

There are two main groups of theories regarding rheumatoid arthritis (1) that it is due essentially to a disturbance of body chemistry and (2) that it is infective in character. The three chief non infective factors are (1) a congenital predisposition (2) endocrine disturbance and (3) faulty alimentation.

The theory of infection is widely accepted and there is considerable evidence in its favor. By some it is assumed that organisms reach a joint and there initiate the series of changes resulting in the production of the disease. By others it is believed that for some reason the joint has become hypersensitive and reacts in an anaphylactic manner when it is reached by a toxin from an infective focus.

An argument advanced against the infection theory is that the joint fluid almost constantly shows no growth on culture. On many occasions however organisms have been cultured from the synovial membrane and it is possible that cultures of the subsynovial tissue obtained without entering the joint cavity may give more frequent positive results.

In a number of cases extirpated deep inguinal glands have furnished abundant evidence of active organisms capable of growth. With Cadham Gibson therefore prepared a vaccine from the organisms found in such glands and gave it subcutaneously in graduated doses of 100 000 000 to 500 000 000 weekly. In no case was there a violent reaction and in every case the treatment seemed to result in some benefit. The chief improvement noted was the arrest of the acute exacerbations of the disease. Gibson is therefore of the opinion that the key to the problem may be found in the bacteriology of the lymphatic glands.

II EARLE CONWELL M D

**Stern W G** Acute Painful Ankylosing Arthritis *J Am M Ass* 1928 XCI 1933

Stern reports two cases of dry arthritis of questionable etiology. In most of his cases of this type there has been a history of tonsillitis furunculosis or some other focus of infection but in none has it been possible to discover any evidences of gonorrhea in spite of careful search for this condition. The symptoms have been mainly subjective—in tense pain on the slightest motion. There has been no swelling increase in the synovial fluid or change demonstrable in the roentgenogram. The only treatment was immobilization in a plaster cast for three months. This resulted in complete permanent ankylosis of the affected joint a few weeks after removal of the cast.

In the discussion of this paper GAENSLER stated that he would hesitate to accept this form of arthritis as a distinct clinical entity because evidences of old gonorrheal infection are always difficult to find and because more detailed bacteriological studies might have shown an organism of the pyogenic group in the synovial fluid removed.

CAMPBELL attributed such cases to a pyogenic organism because the condition follows acute infections.

CHESTER C GUY M D

**McFadden G D F** Obstetrical Paralysis Some Factors in Its Production Progress and Treatment *J Bone & Joint Surg* 1928 X 661

A straight pull on the brachial plexus does not tend to rupture the fibers but a pull downward by

severe depression of a shoulder changes the angle of exit of the nerves from the spinal canal in such a way that tears occur in the upper roots of the plexus. If the arm is pulled hard while it is abducted over the head the lower roots will be torn loose. Rotation of the head also plays an important part. If the head is sharply rotated the large transverse process of the seventh cervical will press forward against the fifth and sixth nerve roots where they join. Obstetrical palsy has been known to follow attempts to rotate the shoulders by twisting the baby's head and may develop also after breech presentation if the obstetrician pulls and twists the body while the head is still fixed in the pelvis.

Although it has been contended that a partial or complete dislocation of the shoulder joint is the primary lesion in Erb's palsy the weight of evidence indicates that this is secondary to the nerve lesion. As the result of interference with the growth of the head of the humerus and contracture of the joint capsule the shoulder takes on a deformed and subluxated appearance. In most cases the child is unable to supinate the forearm. This disability is due not to loss of muscle power in the supinators but to the fixed internal rotation of the humerus which prevents the palm from facing upward.

When there is great difficulty in the delivery of the shoulders it is better to pull with a finger in the axilla even at the risk of breaking a clavicle than to pull on an arm. Rotation or twisting should be strictly avoided.

In the surgical treatment of obstetrical paralysis the arm should be placed in a splint for three months to rest the paralyzed muscles and during this time the shoulder should be put through its full range of motion to prevent contraction and adhesion of the capsule. The best splint is the platform splint. If the paralysis is extensive or if it at first involved the whole arm and has cleared up leaving the upper arm paralyzed an exploratory operation is indicated in order that damaged nerve trunks may be sutured. WILLIAM A. CLARK, M.D.

Garlock J. H. Compound Injuries of the Extremities. *Am J Surg* 1928 v 38:1

Garlock reports nine cases of compound fracture which were treated by debridement and suture. The bones involved were the tibia and fibula, a metatarsal bone and the ulna. Pedicled skin grafts were frequently used at an early stage to cover skin defects. The patients were under observation for a year or more after the injuries and all of the results were very good. In the setting of fractures of long bones kangaroo tendon was sometimes used to maintain the approximation.

ROBERT V. FUSTON, M.D.

Jones Sir R. Volkmann's Ischemic Contracture with Special Reference to Treatment. *Br M J* 1928 ii 639

This paper was the opening discussion to the Section of Orthopedics at the 1928 meeting of the

British Medical Association. Jones first reviews briefly the historical aspects of Volkmann's contracture. The contributions of Volkmann and Lees on the condition have required little revision in the fifty years that have passed since they were written. Pathologically, Volkmann's ischemic contracture is a condition of muscle degeneration followed by fibrous tissue replacement. Some observers have found it more marked on the ulnar than on the radial side. It occurs most frequently in children between the ages of one and fourteen years following an injury about the elbow. In 80 per cent of the cases the injury is a fracture. There is violent flexion of the wrist with extension of the metacarpophalangeal joints and flexion of the fingers. The hand is frequently pronated and the elbow fixed in flexion. The skin over the forearm may be cold and blue. Blisters and scars may be present. The muscles are atrophic and wasted. Nerve involvement due to pressure or injury from a bony spur is a frequent complication. Beginning a few hours after the injury swelling, numbness and loss of voluntary movements of the fingers develop and if untreated progress in forty-eight hours to complete contracture. Mild cases may be unrecognized manifesting themselves merely by slight impairment of extension of the fingers. In some cases only two or three fingers may be affected.

Brooks and Jepson have shown that a combination of factors is necessary for the production of the contracture. Most important are an acute vascular obstruction, blood and serum extravasation and swelling of the soft parts. Pressure from without is not necessary though it is frequently present. Although the contracture has developed in numerous cases in which no bandage has been applied tight bandaging should be avoided.

Despite opinions to the contrary Jones advocates the flexion treatment of elbow fracture. He emphasizes however that there should be no circular compression. The dislocation must be reduced and bony fragments replaced. No splints should be applied and no force used to obtain reduction. If reduction is not easily obtained operative treatment must be considered. In all cases of elbow injury the hand must be carefully watched for pain, swelling, lividity, stiffness and loss of voluntary movements. If these warning signs appear the arm should be elevated and all compression removed. Murphy's suggestion of incision and drainage is logical though not many successful results from it have been reported.

The prognosis is grave especially if the nerves are badly damaged, the circulation of the fingers seriously impaired and the wrist fully flexed with pronation of the hand and fixation of the elbow. When separate movements of the fingers are possible the prognosis is better than if only mass movements are possible. Some improvement can be looked for in almost every case.

Jones has consistently used mechanical extension of the joints by means of extension splints and has

never had cause to regret it. Even when there is complete loss of muscle the relief from claw hand renders the procedure worth while. Physiotherapy (heat, gentle massage, contrast baths and electrical stimulation) is an invaluable aid. Jones has had little experience with operative measures such as tenotomy, tenoplasty and resection of the radius and ulna and his results from surgery have not been encouraging. The operation advised by Page and performed by Platt (detachment of the flexor group from their origin) appeals to him as logical. He is of the opinion that when there is fixed pronation with very little flexion at the elbow resection of the joint may be indicated and may be combined with the operation of Page and Platt.

MICHAEL L. MASON, M.D.

Kuemmell. New Experiences with Posttraumatic Diseases of the Vertebrae (Neue Erfahrungen ueber die posttraumatischen Wirbelerkrankungen). *Zentralbl. f. Chir.* 1928 iv 786.

The author first reviews the results of researches on Kuemmel's disease up to the year 1906. These show chiefly that the vertebrae may be compressed by traumata of no great severity but later resume their original shape so that in the early stages of the condition there are no demonstrable changes of form. Not until a considerable time later does the deformity (gibbus) appear and show that the delicate spongy trabeculae were so injured in their vitality that they underwent resorption. Kocher in particular has called attention to the crushing of the intervertebral disks that is associated with such injury. It is only very rarely that a narrowing of the vertebral body or of the intervertebral disk can be demonstrated roentgenologically.

Our present theories regarding traumatic disease of the vertebrae have been considerably changed by the work of Schmorl. Schmorl demonstrated that by the action of the trauma the bony plate separating the body of the vertebra from the cartilaginous disk above it—the so called terminal lamina—is torn and the nucleus pulposus of the intervertebral disk then unprotected proliferates into the interior of the spongy bone of the vertebral body and disintegrates it. The cartilaginous nodules of Schmorl or the bone hernia of Geipel result. Schmorl has shown further that multiple injuries of the vertebral bodies of this nature may be associated with clinically demonstrable compression fractures.

In the discussion MAU stated that in one case he had been able to demonstrate Schmorl's cartilaginous nodule formation roentgenologically. SCHANZ pointed out that the conception of Kuemmel's disease must be widened since not only gibbus but also kyphosis and scoliosis may be sequelae of changes in the vertebral bodies resulting from relatively slight traumata.

ZUR VERTH stated that in his opinion the cartilaginous nodules are of less importance than Kuemmel believes them to be as they are found in one third of spinal columns examined and also in

cases in which no trauma has been sustained. He regards them as abnormalities like birthmarks. BUDDE (Z).

Dall'Acqua V. A New Method for Obtaining Lateral Projection of the Last Cervical and First Dorsal Vertebrae (Nuovo metodo per la proiezione laterale delle ultime vertebre cervicali e delle prime dorsali). *Radiol. med.* 1928 xv 843.

The lateral picture of the spinal column is of great value in showing changes in the vertebrae that are not visible in the anteroposterior projection but while it is easy to obtain a lateral picture of most of the column it is difficult to obtain one of the last cervical and first dorsal vertebrae because the shadow of the clavicle and humerus are superimposed upon them. A number of methods have been devised for partially overcoming this difficulty but Dall'Acqua describes a method which he thinks is better than the methods previously suggested.

In the author's procedure the patient is placed in the right lateral oblique or better the left lateral oblique position with his body forming an angle of about 55 degrees with the table. The shoulder is brought down as far as possible and the neck supported on a wooden block or a sandbag over which the film is arched. The film is carried down to the subclavicular region and care is taken to adapt it well to the soft parts. To obtain clearer dissociation of the last cervical from the first dorsal vertebra the neck is slightly curved with its convexity toward the tube and the center of its convexity at the sixth cervical vertebra. The tube which is exactly perpendicular to the plane of the table is centered on the sixth and seventh vertebrae. Any inclination upward or downward will interfere with the clearness of the picture.

This method gives a lateral picture not only of the bodies of the seventh cervical and first and second dorsal vertebrae but also of the processes so that the complete vertebrae can be studied without an oblique projection such as is required in the method of Alberti. The clavicle is projected on the body of the second dorsal vertebra or in the intervertebral space between the second and third dorsal vertebrae without greatly disturbing the interpretation of the picture. ALDRIN G. MORGAN, M.D.

Ghormley, R. K. and Bradley, J. I. Prognostic Signs in the X Rays of Tuberculous Spines in Children. *J. Bone & Joint Surg.* 1928 x 96.  
Hibbs, R. A. and Risser, J. C. Treatment of Vertebral Tuberculosis by the Spine Fusion Operation. Report of 236 Cases. A Second Series. *J. Bone & Joint Surg.* 1928 x 805.

GHORMLEY and BRADLEY report their conclusions from a study of 27 cases of tuberculosis of the spine at the New England Feabody Home for Crippled Children. The roentgenograms in these cases were taken at four month intervals after a period of from two to five years. The cases were treated for the most part conservatively.



severe depression of a shoulder changes the angle of exit of the nerves from the spinal canal in such a way that tears occur in the upper roots of the plexus. If the arm is pulled hard while it is abducted over the head the lower roots will be torn loose. Rotation of the head also plays an important part. If the head is sharply rotated the large transverse process of the seventh cervical will press forward against the fifth and sixth nerve roots where they join. Obstetrical palsy has been known to follow attempts to rotate the shoulders by twisting the baby's head and may develop also after breech presentation if the obstetrician pulls and twists the body while the head is still fixed in the pelvis.

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tried. If this fails surgical ankylosis of the joint may be required.

**Combined pelvic joint strain.** Symptoms of both lumbosacral and sacro iliac lesions may be found together. Semi sacralization of the fifth lumbar vertebra should be sought for in such cases. The treatment indicated is prolonged immobilization and support.  
CHESTER C. GUY, M.D.

Swaim, J. T. The Prevention of Deformities of the Knee in Arthritis. *J. Bone & Joint Surg.* 1918, 7: 742.

The most common deformity of the knee in arthritis is flexion and subluxation with outward rotation. This deformity presents a grave problem since whatever procedure is used—conservative stretching manipulation or surgery—a completely successful functional result is rarely obtained after its development.

The cause of flexion of the knee is the desire of the patient to relieve pain during the acute painful stage of the disease. After flexion takes place and complete extension has become impossible the second deformity subluxation begins. The effort must therefore be made to relieve pain and tension by placing the knee at rest without flexion. The author accomplishes this by means of a light plaster of Paris cast applied from the hip to the toes with the leg extended but not hyperextended. To prevent fixation the cast is bivalved within three days. In most cases complete rest of a few days is sufficient.  
H. EARLE CONWELL, M.D.

## SURGERY OF THE BONES JOINTS MUSCLES TENDONS ETC

Royle, N. D. An Original Technique in Tendon Transplantation. *J. Coll. Surg. Australas.* 1918, 1: 115.

To obviate the slipping of a transplanted tendon the author uses the tendon as a living suture. For example the biceps tendon is passed through the quadriceps tendon and the semitendinosus is then brought forward and passed through the quadriceps and biceps together these two tendons being thus anchored to each other as well as to the quadriceps. In transplantation of the tibialis posterior into the Achilles tendon the former is split into two unequal strands the larger strand is passed through the center of the Achilles tendon longitudinally and the smaller is woven back and forth as a suture to hold the larger strand in place.

In cases of paralysis of the tibialis anterior the peroneus brevis is brought down through the tibialis sheath from an incision above the ankle. A piece of the tibialis amounting to about a third of its diameter is then stripped from the tendon starting at the incision above the ankle joint pulled down through the sheath and used as a living suture still attached at its original insertion to stitch the peroneus brevis to the main tendon of the tibialis anterior.

In case of wrist drop the pronator teres is transplanted into the wrist extensors. A living suture is stripped from one of the extensor tendons from below upward being left attached to the belly of the muscle and with this living suture the pronator teres is stitched into the two extensors of the wrist.

In cases of paralysis the small tendons of the fingers and thumb can be used as direct living sutures to stitch themselves into active tendons.

The tensor fasciae can be used to reinforce a defective quadriceps by splitting off three or four strips and using them to suture the main body of the fascia lata into the quadriceps. The advantages claimed for this method are that the living suture does not weaken a tendon whereas foreign material causes weakening wherever it is passed through there is no postoperative slipping the patient walking with safety in three weeks and accurate adjustment of tension is possible during the operation so that the final tension is midway between extreme relaxation and extreme contraction.

WILLIAM A. CLARK, M.D.

Leriche, R. Arthrotoomy of the Elbow Supplemented by Section of the Lateral Ligaments and Temporary Posterior Dislocation for the Treatment of Articular Chondromatosis and to Facilitate Certain Osteosyntheses (De l'arthrotomie élargie du coude par section des ligaments latéraux et désarticulation temporaire pour faciliter certaines ostéosyntheses). *Lyon chir.* 1928, XIV: 459.

The ordinary arthrotoomies of the elbow give a poor exposure. Even when the olecranon is sectioned the anterior synovial cul de sac is difficult to reach. In two cases of multiple foreign bodies and one case of vicious union of a fractured external condyle Leriche added section of the lateral ligaments to the method of arthrotoomy in which the olecranon is sectioned. This allowed the elbow to be dislocated as in resection but to a less degree. After treatment of the lesions the ligaments were sutured with catgut and the joint was closed without drainage.

In the first two cases in which the bone was not touched mobilization was begun on the seventh day. The patients all laborers had resumed their work four months later. There was no tendency toward flail joint.

Section of the olecranon is best done quite low down. Simple detachment of a lamella of bone including the tendon of the triceps has proved less satisfactory. Either a Y incision the branches of which follow the borders of the triceps tendon or a long lateral incision should be used to approach the joint.  
ALBERT F. DE GROOT, M.D.

Bailey, H. Volkmann's Ischemic Contracture Treated by Transplantation of the Internal Epicondyle. *Brit. J. Surg.* 1918, XVI: 335.

Bailey reports a case in which Volkmann's ischemic contracture developed in a child of four years following a transverse fracture of the lower

The prognostic signs are divided into (1) the changes observed in the tuberculous lesion itself and (2) the changes observed in the tuberculous abscess.

The most favorable type of case so far as permanent arrest of the disease is concerned seems to be that in which there is X ray evidence of fusion between the partially destroyed vertebrae.

The authors state that the importance of the abscess accompanying tuberculosis of the spine can not be over emphasized. A decrease in the size of the abscess is a favorable sign. Calcification of the abscess does not necessarily signify improvement. The abscess itself may add greatly to the destructive process in the vertebrae through direct pressure.

HITAN and RISSER review 286 consecutive cases of vertebral tuberculosis in which the spinal fusion operation was done at the New York Orthopedic Dispensary and Hospital in the period from 1915 to 1920. The results in 30 cases which were followed for an average of only two years were doubtful or unknown and are therefore excluded from the discussion. In 74.6 per cent of the others a cure was obtained. In 8 cases (3.1 per cent) the patient survived but was not cured. There were 67 deaths, a mortality of 26.2 per cent. Ten patients died from causes other than tuberculosis of the spine, the spinal lesion having been cured. Sixty per cent of the patients were less than five years of age at the onset of the disease and 40 per cent were less than five years of age at the time of operation. Sixty-three per cent were less than ten years of age at the time of the operation. Following the operation the patients were transferred to the country branch of the hospital where the average stay was one year and seven months. There were 3 operative deaths, an operative mortality of 0.9 per cent. All of the patients who failed to survive the operation were poor risks. In a total of 534 operations performed in the period from 1911 to 1920 the mortality was only 0.5 per cent.

In conclusion the authors state that any treatment in vertebral tuberculosis must be applicable to children as the condition occurs most frequently in childhood. They believe there is no justification for the hope that all of the diseased joints will become fused under treatment by conservative methods.

ROBERT A. FURBER, M.D.

Cochrane W. A. Low Backache and Sciatica  
*Brit Med J* 1925 11: 606

The main problems to be considered in cases of low backache are:

1. The anatomical type or build of the patient. He may be slender and delicate and unsuited to heavy work.

2. The patient's posture and use of the body. The posture may be incorrect and the body used in positions of mechanical disadvantage.

3. The roentgenogram of the spine. Absence of signs of pathological changes in the roentgenogram may be due to a lack of lateral and stereoscopic views.

4. The possible presence of an intrinsic spinal lesion such as osteo-arthritis in cases of alleged injury in which the symptoms are out of proportion to the trauma.

5. The relation of anatomical variations to back ache and sciatica.

6. The mental problem and the question of malingering.

In the diagnosis the patient's general build and attitude, the presence or absence of the normal lumbar curve and of a lateral deviation, restriction of movement and pain on movement of the spine and hips in lying, sitting and standing, spasm or wasting of muscles, the presence or absence of swelling and tender points in the lumbosacroiliac region, the findings of rectal examination and the nerve function in the legs must be considered.

The etiology, pathology and treatment of acute traumatic strain, general postural strain, lumbosacral strain, sacroiliac strain and combined pelvic joint strain are discussed.

**Acute traumatic strain.** Acute traumatic strain is a rupture of ligaments and muscle fibers due to violence and has a sudden onset with well localized symptoms. It should be treated first by recumbency on a firm mattress with the knees elevated and the back strapped with adhesive. Later heat massage and graduated exercises are advisable. By early treatment and the correction of faulty posture chronic disability is prevented.

**General postural strain.** This can be a general aching which is not confined to any one joint and usually occurs in slender asthenic persons who are engaged in a fatiguing occupation or adopt faulty attitudes resulting in poor posture. The treatment should consist in rest, support and postural re-education.

**Lumbosacral strain.** In this condition the distress is usually asymmetrical and sciatica is a frequent symptom. Lumbosacral strain occurs most often in stout persons with a pendulous abdomen. Lateral bending of the lumbar spine is freer in one direction than in another and flexion of the hip with extension of the knee is limited on the affected side. Disturbances of nerve sensibility and muscle atrophy of the leg may be present. The treatment is recumbency with the knees flexed, the application of hot fomentations to the back for forty-five minutes three times a day, exercises to flatten the lumbar spine when the soreness has gone and the application of a plaster jacket when the patient is allowed up. When the patient has learned to stand correctly the plaster jacket should be discarded.

**Sacroiliac strain.** This is commonest in the slender vasomotor type of person with a poor posture and a lordosis. The upper part of the sacrum moves forward with resulting strain. When the patient is standing and bending far forward he flexes the knee on the affected side. The treatment of the mild case is similar to that of the lumbosacral type. In more resistant cases for full flexion of the hip with the knee straight and the patient anesthetized may be

(by tendon transplantations) in cases of infantile paralysis is with marked growth disturbances. Immediate success cannot be expected however as the growth of the nerves from the healthy into the paralyzed muscle takes a long time at least two years.

SCHAUZ recommended lumbar puncture in the treatment of infantile paralysis since under its influence the respiratory processes develop more rapidly and completely than otherwise. He does not oppose the development of contractures because such opposition is futile and because at a later operation it is desirable that the process shall to a certain extent have been completed. On the other hand he attaches great importance to getting the patient to work early. Work in his opinion is much more beneficial than gymnastic exercises. In severe paralysis of the foot he performs luxation arthrodesis which is similar to Whitman's operation and instead of Stöckel's operation which is often followed by recurrence he performs operations on the muscles and tendons.

FRIEND stated that to prevent recurrences after Stöckel's operation it has been his practice since 1910 to fasten the central nerve ends after the division as high up as possible on the nerve trunk with a fine silk suture so that on growing out they cannot reach the muscle. He has never seen recurrence follow this method. DUMONT (Z)

Abbott L C and Crego C H Operative Lengthening of the Femur *Southern M J* 1928 221 823

The authors report in detail the technique of operative lengthening of the femur and describe the splint they have devised and the method of its application.

A screw is inserted just above the condyle and about 1 in below the lesser trochanter. An incision is then made along the outer side of the femur and a Z shaped osteotomy of the femur about 5 in long is done with a motor saw and osteotome. The deep fascia, rotator band and biceps tendon are then sectioned obliquely. Clamps are used to keep the fragments in place. A drain is inserted in the upper angle of the wound and suturing is done with catgut and with silk. The turnbuckle apparatus is then applied.

After the operation attention is paid to keeping the fragments in accurate alignment and preventing injury to the soft parts. The drain is removed after forty eight hours. When the inflammation has subsided usually after five or six days the lengthening process is begun. As this proceeds the distance between the pins on the inside is accurately measured. A gain of about .5 in a day may be expected. Roentgenograms are taken each week to check the position and amount of lengthening. An average time of about four weeks is required to regain 2.5 in. Protected weight bearing is allowed after five months and full weight bearing after from seven to eight months.

The operation has been performed upon eight femora. The oldest child was sixteen years and the youngest ten years of age. The greatest length secured was 3.5 in and the least 1.5 in. There were no infections.

The authors report the eight cases in considerable detail. They do not advocate the method as a routine procedure but believe it of great value in selected cases. ROBERT A. FENSTON M.D.

Campbell W C End Results of Arthroplasty of the Knee *J Bone & Joint Surg* 1928 x 8 2

A knee joint which was opened about a year after arthroplasty because of slight locking showed a definite joint space about one half the capacity of a normal joint. The articular surfaces were smooth and glistening and there was a small amount of joint fluid. A few adhesions under the quadriceps tendon did not interfere with motion. The joint lining membrane resembled in every detail the free transplant of fascia lata that had been put in at the original operation. Histologically this membrane consisted of three layers: (1) a dense fibrous layer (2) fibrocartilage and (3) bone. In some places there were fibrous bundles passing from the cartilage layer to the bone. A new functional joint had therefore been formed. Extension was complete and there was flexion to 90 degrees.

Similar findings were made in the cases of joints which were opened because of instability after arthroplasty.

The presence of a new joint space after arthroplasty can be demonstrated also by roentgenograms. Osteoporosis is evident for from three to six months but after that length of time the bone appears normal in structure. A very small number of the author's cases showed bone proliferation. These were usually cases in which acute infectious arthritis had been the original lesion. There may be no relation between function and the roentgen ray findings but as a rule a smooth regular joint surface is associated with functional efficiency.

In appraising the results of arthroplasty of the knee the nature of the original lesion must be considered. The results of operation in young adults following acute pyogenic infection in a single knee ankylosed at an angle of not less than 140 degrees were successful in from 80 to 94 per cent of the cases whereas the same operation following virulent osteomyelitis extending through the joint was always unsuccessful.

This article is based on 112 cases but is concerned chiefly with 2 cases in which from four to nine years have elapsed since the arthroplasty. The ages of the patients ranged from fourteen to fifty years. The final result as estimated by the patient was excellent in 19 cases and poor in 3. The motion obtained ranged from 45 to 140 degrees. Walking up stairs was satisfactory in 14 cases and walking down stairs was satisfactory in 1. Stability was good in 18 cases. Slight or occasional pain was present in 5 cases. WILLIAM A. CLARK M.D.

end of the humerus which received prompt treatment the arm being put up in flexion and supination. As no improvement was noted after diligent massage for three months a modified Page operation was performed.

The origin of the flexor muscles was carefully dissected from the upper third of the ulna, the main common origin including the internal epicondyle separated from the humerus and the condyle with the attached muscles then fastened in a prepared bed on the inner side of the shaft of the ulna at the juncture of the upper third and the lower two thirds.

After the operation massage was again instituted. Seven months later the function of the arm was almost perfect.

ROBERT C. LONERGAN, M.D.

Henry A. K. An Operation for Making the Fore arm Prehensile After the Loss of a Hand. *Brit J Surg* 1918 xvi 183

The author describes a unique reconstruction operation performed on a man whose left hand had been amputated at the wrist.

Two longitudinal incisions were made, one in the midline of the flexor aspect and the other on the dorsal side a fingerbreadth radial to the middle line. In order to provide a web at the base of the new digit these incisions were made to approach the ulna at their proximal ends. The incisions were deepened to the bone—the volar incision between the tendons of the flexor carpi radialis and the flexors of the fingers and the dorsal incision between the radial extensors of the wrist and the common extensors of the fingers. The periosteum was divided longitudinally and a 5 in. rod was separated from the lateral aspect of the radial shaft. The tendon of the flexor pollicis longus, the radial artery, and the tendon of the flexor carpi radialis were then transferred *en bloc* to the flexor surface of the rod and the skin was sutured around the new digit so formed. The ulnar and radial shafts were shortened sufficiently to allow a medial flap of skin to be turned like a hood over their radial aspect. The distal end of the limb resembled a boxing glove.

The rod became ankylosed with the radial shaft but after about three months the patient was able to appose the new digit to the ulnar portion of the extremity by pronation and to release it by supination. He then soon became able to grasp objects to write etc.

The author describes also the Krukenberg operation which converts the radius and ulna into two jaws resembling the blades of a crocodile forceps.

DANIEL H. LEVINTHAL, M.D.

Brandes. Clinical Experience with Tenoplasties on the Legs (Aus der klinischen Erfahrung mit Sehnenplastik am Bein). *Zentralbl f Chir* 1928 lv 807

Brandes advises a simple technique for tenoplasty with careful attention to the mechanical and physiological relationships of the muscles and joints and the utilization of all operative possibilities (periosteal and tendinous methods, tendon sheath substitu-

tions etc.) The operation must not be performed when the patient is too young nor should insufficiently functioning muscles be transplanted. It is emphasized especially that tenoplasty should not be limited to cases with paralysis (infantile paralysis) since it often gives very good results in flat foot (the method of Hass or that of the author). It is important that before the tenoplasty operative reconstruction of the shape or simplification of the joint mechanism should be undertaken (extirpation of the talus according to Whitman in talipes calcaneus, arthrodesis of the lower part of the ankle joint in varus or valgus position of the calcaneus). For paralytic talipes calcaneus the author recommends as a preliminary operation extirpation of the talus with replacement of the trochlea tali on the pushed back and stretched calcaneus. So far as possible the dividing or slitting of tendons should be avoided. Such procedures are reduced to the minimum by good separation of the plane of operation for assistance with ascending and descending plastic work on both tibialis anticus and tibialis posterior muscles.

In cases of claw foot Brandes has had good results from Scherb's transplantation of individual long extensor tendons to the metatarsal bones or correction in Schultz's osteoclast. With a tenoplasty it is possible also to combine a partial tenodesis of the foot as for example in pes valgus paralyticus (in the anterior part of the foot—plastic repair and removal of the elements of the incomplete flat foot by displacement of the tibia posterior muscle).

Since tenodeses and fasciodeses give results that are usually unsatisfactory in the long run and the tendons used become stretched Brandes endeavors in tenodeses of the ankle joint to place the tendons in shallow grooves chiseled out of the bone beneath the periosteum and to suture them there in a taut state so that they become very short articular ligaments. This is done in one or several stages.

In conclusion Brandes calls attention to the great importance of improvement in the technique of tenoplasty because of the poor results of plastic operations on the nerves.

In the discussion MAU stated that in general arthrodesis should be postponed until adolescence. For pes calcaneus valgus he recommended Whitman's operation. He stated that theoretically there seem to be reasons against a plastic operation on the quadriceps if the gluteus maximus, the flexors of the knee and the musculature of the calf of the leg are preserved (injury to the function of extension of the knee). For paralysis of the deltoid he prefers arthrodesis in the cases of adults. In the cases of children and youths an attempt at plastic operation on the muscles is indicated (combined myoplasty with the use of the trapezius and the pectoralis major).

DEUTSCHLAENDER stated that he had been favorably impressed by indirect neurotization of the paralyzed muscle by its attachment to a healthy muscle combined with static equalization in length.

### Osgood R B Compression Fractures of the Spine *New England J Med* 1928 cxcix 861

Compression fractures constitute nearly one half of all spinal fractures. The apparently mild nature of the injuries in these cases is an important feature. Early diagnosis is essential.

Such fractures result most commonly from falls or blows which cause jackknifing of the spinal column with crushing of one or more of the spongy vertebral bodies. In from 70 to 80 per cent of the cases the eleventh or twelfth thoracic or first or second lumbar vertebra is involved.

In some cases the signs and symptoms may be so slight as to pass unnoticed. Therefore following marked hyperflexion of the spine the possibility of a compression fracture should be considered and lateral and anteroposterior roentgenograms should be taken. The chief early symptoms are pain referred to the region of the lesion, local tenderness and muscle spasm which limits motion. Kuemmel distinguished three stages in spinal fractures: (1) the stage of the initial injury; (2) a period of comparative well being; and (3) the stage in which angular kyphosis and pain develop.

In the treatment the general condition, the duration of the neurological signs and symptoms and the nature of the lesion must be considered.

If the patient is in severe shock, immediate operation is contra indicated unless it offers the only chance of saving his life. If the neurological signs appear immediately after the injury there is little hope for recovery. If they come on gradually and increasingly every effort should be made to treat the condition by manipulation or operation. In cases with increasing or stationary neurological signs and blood in the spinal fluid laminectomy may be indicated. Care must be taken to prevent cystitis and bedsores.

Fractures of the sacrum and coccyx due to crush heal readily when strapping is applied and activity is restricted for a short while. In cases of crushing fracture of a single vertebra the treatment indicated is immobilization and complete recumbency for from six to eight weeks followed by a gradual return to activity. Normal activity may be expected in from four to six months. The immobilization may be obtained by means of a plaster shell or jacket or a Wallace spinal bed. The Davis method of reduction by hyperextension is promising. Long standing cases with disability and pain may require ankylosing operations. It should be remembered however that it is postural correction and not ankylosis that insures freedom from pain and disability and that postural correction is accomplished much more easily before than after an operation.

DANIEL H. LEVINTHAL, M.D.

### Hart V L Spontaneous Dislocations of the Hip Joint During Early Life. Report of Twenty Eight Cases. *Arch Surg* 1928 xlvii 587

Dislocations of the hip joint may be classified as (1) congenital (2) acquired traumatic and (3) ac-

quired non traumatic also termed pathological or spontaneous. In the period from 1923 to 1925 twenty eight cases of spontaneous dislocation of the hip were admitted to the University Hospital Ann Arbor Michigan.

In sixteen of the twenty eight cases there was metastatic septic arthritis of the hip joint secondary to remote infection. In five the involvement of the hip had been preceded by an infection of the upper respiratory tract. In three there was a history of acute osteomyelitis and in two a history of discharge ingear. In the remaining six cases the remote sources of infection were pneumonia with empyema, aspiration pneumonia and empyema following tonsillectomy, scarlet fever, acute rheumatic fever, suppurative axillary adenitis and wound infection of the face. Cultures of pus obtained from eight of the sixteen patients with metastatic septic arthritis showed staphylococcus aureus in four cases, streptococcus hemolyticus in two cases, staphylococcus albus in one case, the tubercle bacillus in two cases and diplococcus pneumoniae in one case.

Four of the twenty eight spontaneous dislocations of the hip were due to anterior poliomyelitis. In each of these cases the head of the femur could be easily displaced and reduced by manipulation and there was a flexion adduction contracture deformity of the involved hip.

In four other cases the etiological factor was congenital cerebral paralysis with paraplegia.

In two cases the dislocation was a complication of polyarticular arthritis or Still's disease and the hip was in a position of flexion adduction and internal rotation.

In two cases a positive diagnosis of tuberculosis of the hip joint was made. Dislocation is unusual in this condition because of the insidious onset of the infection and the scar formation it produces. During the acute stage of tuberculous arthritis with muscle spasm the position of flexion adduction and external rotation is the rule. If this position is replaced by flexion adduction and internal rotation before the formation of considerable fibrosis dislocation is imminent.

In all of the twenty eight cases the dislocation occurred before the age of seventeen years. In the child the acetabula are very shallow and displacement is easier than in the adult.

In three of the cases reviewed the dislocation was bilateral. The unilateral dislocations involved the left hip in sixteen cases and the right hip in nine cases. In twelve of the twenty five cases of unilateral dislocation there was a pathological condition of the other hip. In all except one of the twenty eight cases the dislocated extremity was in a position of flexion adduction and internal rotation. In the one exception a case of purulent arthritis the position was that of flexion abduction and external rotation.

The local pathological condition of the hip joint varied according to the etiological factor, the age of the disease and the period of weight bearing. The pathological changes in the sixteen cases with septic

## FRACTURES AND DISLOCATIONS

Cowan J F Non Union of Fractures An Experimental and Clinical Study *Ann Surg* 1928  
LXXVIII 749

Cowan states that in young animals the periosteum is firmly adherent to the bone in the epiphyseal region but along the shaft is attached more loosely and is separated from the bone by a layer of rather loose areolar tissue in which are many osteal fibroblastic cells. In adults the periosteum is more firmly adherent and often is lacerated at the fracture line. The cortical bone is relatively thicker than in the young, the haversian canals are smaller and the osteal fibroblasts are fewer.

In simple fractures hemorrhage occurs under the periosteum along the shaft and for a short distance into the medulla. With laceration of the periosteum the blood extravasates into the soft tissues. Fibrin forms in the clot and serves as a bridge across the fracture and as a stimulus to fibroblastic proliferation. As early as the second day fine capillary buds can be seen growing into the clot from the periosteum and medulla. This forms an edematous granulation tissue which is the beginning of callus. In one week this procallus granulation tissue is well developed. Ossification proceeds along the blood vessels thus forming small tubule of bone. Cartilage is also deposited. When pressure is exerted on the callus by the fragments there is a tendency toward excessive cartilage production. With lifting of the periosteum parts of the cortical bone are deprived of circulation and die. These parts become irregular from erosion and are replaced by the new bone growth.

The principal functions of the periosteum seem to be to form a bridge between the fragments and to serve as a limiting membrane confining the blood and clot in which the callus develops.

Union depends upon a vascular communication between the procallus granulation tissue of the fragments. The medullary callus depends upon the amount of hemorrhage into the medullary cavity. It is usually secondary in importance to the periosteal callus but forms an appreciable bridge.

Röntgenograms of ununited fracture in human bones show a medullary osseous callus filling the ends of the fragments and forming a bone button, an increase in the diameter of the end of one or both fragments, a decrease in the end of one or rarely both fragments, or convexity of the end of one fragment usually the upper with concavity of the end of the other and a cleft between the two.

Histological examination may show (1) firm fibrous union, (2) loose fibrous bands, or (3) a pseudarthrosis with cartilage and synovial membrane. The fibrous mass is avascular.

The one finding common to all of the ununited fractures examined by the authors was separation of fragments. This can occur only with laceration of the periosteum. Its importance is most evident in fractures of the patella and the olecranon in which suture of the fibroperiosteum is necessary to

secure bony union. Ingrowth of fibrous tissue from the periosteum in cases of wide separation of fragments will prevent a vascular communication between the procallus granulations and thus delay or prevent bony union. Bone production takes place but the bone forms across the end of each fragment in a direction transverse to the long axis of the shaft instead of parallel with the shaft across the fracture line. Obviously the closer the approximation to the fragments the less chance there is for this to occur.

In the surgical treatment of an ununited fracture the attempt should be made to (1) elevate the periosteum for a short distance on either side of the fibrous band, (2) remove the fibrous tissue from between the fragments, (3) open the medullary spaces, and (4) prevent recurrence of fibrous tissue ingrowth between the fragments. To keep the medulla from closing up again Cowan makes a trough longitudinally across the fracture just as for the introduction of an inlay graft. To prevent fibrous tissue from growing in again he rolls a thin piece of cortex from a rib into a band and inserts it around the ends of the fragments at the line of separation. Equally good results have been obtained with a piece of egg membrane. The ends of the medullary spaces and the space between fragments fill up with blood which later forms a clot and is organized into callus.

WILLIAM A. CLARK M.D.

Murray C R Fracture of the Clavicle *Surg Clin N Am* 1928 VIII 1025

The author describes the application and use of the clavicular cross in the treatment of fracture of the clavicle. He prefers it to other methods because it allows function in the affected extremity, causes no atrophy and requires little or no after treatment.

DANIEL H. LEVINSKY M.D.

Elkenbary C F Fractures of the Elbow Through or Near the Lower Epiphysis of the Humerus *J Bone & Joint Surg* 1928 I 757

Before the reduction of a fracture of the elbow is attempted a roentgenogram should be made. Reduction is best carried out with the part held under the fluoroscope and with the patient under general anesthesia. In lieu of the fluoroscope another roentgenogram should be made before the splints are applied and before the patient recovers consciousness. If the findings are not satisfactory another attempt at reduction should be made.

Flexing the forearm without at the same time reducing the posterior displacement will merely rotate the lower fragments transversely. Flex on will readily help to reduce a fracture but will not accomplish reduction.

Volkmann's contracture is best prevented by keeping the patient under observation after the reduction in order that the splints may be re-adjusted whenever necessary. A few hours of neglect may lead to a condition that can never be corrected.

H. EARLE CONWELL M.D.

older children who have well developed femoral heads and acetabula

ALLISON emphasizes the importance of early reduction and gentle reduction in congenital dislocation of the hip. He is in favor of open reduction as it gives promise of a higher percentage of final cures than closed reduction. Because of the changes in bone which result from long continued immobilization the plaster cast should be removed as soon as possible. Open operation shortens the period of immobilization. Some of the obstacles to be overcome are (1) shallowness of the acetabulum (2) irregular shape of the femoral head (3) torsion of the neck (4) shortness of the abductor muscles (5) shortness of the posterior muscles fascia lata and iliotibial band and (6) shortness of the ilio femoral band. In some cases distortion and other developmental anomalies in the upper femoral region preclude the possibility of a good functional hip even when reduction is accomplished.

GILL reports the results of seventy-five open operations for old or irreducible congenital dislocation of the hip. He divides the cases into three groups according to the type of operation required and the anatomical and functional results which may be expected from it. Cases of the first group are those in which the acetabulum is shallow and the femoral head projects beyond its upper margin but is not completely dislocated. In the second group are cases in which there is complete dislocation but by open operation the head of the femur can be replaced in the acetabulum without great force or tension. The third group is made up of cases in which there is upward displacement of the head of from 1 to 4 in. and the head cannot be replaced in the original acetabulum at the time of operation or can be replaced only by the use of excessive force.

Gill performs three types of operation. In Type 1 a bone shelf is turned down from the outer plate of the ilium over and behind the unreduced head and no attempt is made to use the original acetabulum. In Type 2 a partial reduction is effected into the original acetabulum and the acetabulum is enlarged upward by plastic reshaping of the roof. In Type 3 for cases in which complete reduction of the head requires deepening of the acetabulum and the turning down of an artificial roof and the femoral neck is so short that the trochanter impinges on the ilium preventing retention of the head in the acetabulum the trochanter is cut off and reattached down on the shaft.

Deformities of the head of the femur are frequently encountered. The mushroom shaped heads are easily injured in reduction. The entire cartilage may be knocked off. When this occurs the result must be bony ankylosis. Version of the neck has never caused trouble enough to justify osteotomy. In cases of bilateral dislocation good mobility is secured in one hip before the other is treated.

In all of Gill's operatively treated cases a strong stable joint has been secured. In those in which operations of Types 1 and 2 were performed there is good mobility. Of those in which the Type 3 operation was done ankylosis resulted in three cases and in the others the mobility is not so good as in the cases treated by operations of Types 1 and 2. Pain has been present in only two cases. In practically all cases function has been improved and endurance has increased. In general the author is an exponent of the open method although he at times closed reduction in the cases of all patients under six years of age. WILLIAM A. CLARK, M.D.

Jones J. P. Intercapitular Dislocation of the Patella. *Brit J Surg* 1928 XVI 338

A girl eleven years of age injured her right knee by slipping on the edge of a pavement and over a bicycle in the dark. The roentgenogram showed that the upper edge of the patella had been pulled down and wedged in the intercondylar notch of the femur. As manipulation under anesthesia failed to reduce the dislocation open operation was done. It was necessary to lever the patella from the intercondylar notch but when once freed it retained its normal position without suture. The quadriceps extensor insertion had been stripped from the upper and anterior surface of the patella.

After closure of the wound a plaster cast was applied. This was worn for four weeks being taken off only for massage and movements. Uneventful recovery resulted.

The mechanism of the type of injury sustained in this case has never been satisfactorily explained. The author suggests that the first movement is an extreme and forcible flexion of the knee which leaves the upper end of the patella on a level with the intercondylar notch of the femur and that this is rapidly followed by extension in which the patella remains in its new position and the quadriceps stripped from the anterior surface of the patella acts on the lower border wedging it firmly between the two condyles of the femur.

ROBERT C. LONERGAN, M.D.



arthritis of the hip joint ranged from a serous to a purulent arthritis with or without destruction of bone and soft tissue

In the second and third groups of cases with involvement of the lower and upper neurone respectively there were no arthritic changes. The local pathological condition consisted in a disturbance of the normal muscular balance resulting from the flaccid paralysis of anterior poliomyelitis and muscle incoordination with increased muscle tone due to a cerebral lesion

In the fourth group the local pathological condition varied from slight to extensive bone and joint destruction with disturbance of the normal muscle balance due to muscle spasm during the acute period of the disease

The author concludes that a derangement in the muscle balance is the one pathological factor common to all cases and should be considered the essential factor in the mechanism of development of the dislocation

Recently it has been demonstrated by Jones that the mechanism of production of the dislocation is a derangement of the normal action of the muscles surrounding the hip joint and is not dependent upon lesions of bone or ligament. The normal muscular arrangement about the hip joint may be altered by muscle spasm, muscle paralysis and muscle incoordination. Muscle spasm is always present during the acute phase of hip-joint infection and unless treatment is given the extremity assumes an attitude of flexion associated with either abduction and external rotation or adduction and internal rotation. During the acute stage of hip joint infection the position most frequently assumed is flexion, abduction and external rotation without the production of dislocation. In the position of flexion, adduction and internal rotation which is not uncommon dislocation is imminent. The first position is one of stability, the second one of instability.

The clinical signs and symptoms of spontaneous dislocation of the hip are similar to those present in congenital dislocation—a definite limp and lordosis when the subject is walking, actual and apparent shortening and the presence of the greater trochanter above Nelaton's line.

The author believes that spontaneous dislocation of the hip joint is preventable and that emphasis should be placed upon preventive treatment because when the deformity is once established any attempt at its correction requires a long period of hospitalization. The necessary mechanical apparatus should be applied to prevent the patient from assuming the position of instability. During the acute stage of any infectious process involving the hip joint the muscle spasm may be relieved by the application of skin traction and the extremity placed in extension and abduction the position of stability. If bony ankylosis is anticipated a solid plaster spica may be applied in the optimum position for ankylosis of the hip joint. In the author's opinion the optimum position for ankylosis is neutral as regards abduc-

tion, adduction and rotation and the position of flexion should depend entirely upon the patient's occupation. In children the hip joint is placed in flexion of about 30 degrees.

The treatment of patients with an established deformity is a complicated problem. Deformities of other joints may demand correction before the dislocation is reduced. In dislocation of the hip resulting from muscle spasm the prognosis for function is fairly good. Incision and drainage of abscesses should be done if necessary and skin traction applied to the dislocated extremity. The traction should be applied first in the line of deformity and with gradual cessation of the muscle spasm the line of traction changed by degrees to a position of extension and abduction.

The degree of disability depends upon the disturbance of the weight bearing line, the true and apparent shortening, the extent of bone and joint destruction, the degree of mobility and stability, whether the hip joint involvement is unilateral or bilateral and the presence or absence of associated deformities and of pain.

Stability and mobility are both of importance in the function of the hip joint, but stability is the more important. A stable and painless hip joint may be obtained by skeletal traction followed by arthrodesis of the joint. In the presence of bony ankylosis a subtrochanteric osteotomy may improve the weight bearing line and correct the apparent shortening. Skeletal traction followed by reduction of the dislocation is indicated when the bone and joint destruction is slight. NORMAN C. BULLOCK, M.D.

Swett, P. P. An Operation for the Reduction of Certain Types of Congenital Dislocation of the Hip. *J Bone & Jt Surg* 1928 10: 673.

Allison, N. The Adaptive Changes in the Hip in Congenital Dislocation and Their Importance in Treatment. *J Bone & Jt Surg* 1918 10: 687.

Giff, A. B. Operation for Old or Irreducible Congenital Dislocation of the Hip. *J Bone & Jt Surg* 1918 10: 696.

SWETT proposes subtrochanteric osteotomy for irreducible dislocations of the hip and has treated five cases by this procedure. After the osteotomy through a Smith-Petersen incision the head can easily be placed in the acetabulum. The fragments of course overlap and there is about an inch of shortening but the leg is longer than before the reduction and after healing of the osteotomy there is good function. In some cases the roentgenogram shows a badly distorted relation of the head, neck and shaft but this does not seem to interfere with function. Convalescence is longer than after simple fractures and postoperative care is most important. Swett suggests that redressment and the application of a new cast after three weeks or traction in abduction immediately after the operation might result in better alignment and more length. The operation provides a means of reduction when all other methods fail and is justified especially in the cases of

MacLeod J M H Sicard Forestier Gaugier and Others Discussion on the Treatment of Varicose Ulcers by Intravenous Injections *Proc Roy Soc Med Lond* 1928 xii 183

SICARD FORESTIER and GAUGIER who read the first and chief paper in this symposium summarized the conditions favoring the development of varicose ulcers as (1) general factors affecting the blood vessels such as a hereditary predisposition endocrine sympathetic dyscrasia age and syphilis and (2) local or mechanical influences such as intrapevic pressure constant standing trauma hemorrhages local infections and eczema of the skin and local infection phlebitis. The general influences take the form of weakness of the walls and valves of the vein and of the supporting perivascular tissue.

In postphlebitic ulceration developing in an oedematous leg with venectasia obliterating injections are contra indicated. The treatment should consist in rest massage and support.

Dirty seriginous ulcers with eczema pigmentation and peripheral sclerosis are likewise unsuitable for injection and should be treated by rest disinfection vaccine ultraviolet light and surgery.

Cases of ulcer with moderate or mild local disturbance should be treated by intravenous obliterative injections and local treatment of the lesion.

Mixed syphilitic and varicose ulceration should be treated by both anti-syphilis methods and obliterative injections.

The obliterative is brought about by the injection of 2 or 3 ccm of a 20 to 60 per cent solution of sodium salicylate in water. Quinine urethane by peritoneal saline solution sodium citrate and 50 to 66 per cent glucose have also been used but are not so good. A tourniquet may or may not be applied. The injections are given with the patient lying down and are made into the veins proximal to the ulcer. To prevent undue pain and sloughing the needle must be in the vein. Three hundred thousand injections of sodium salicylate and 25 000 injections of quinine have been given without causing embolism.

HIGGINS reported good results in 200 cases in 35 of which there was active ulceration at the time of injection. He believes that in the production of true varicose ulcers trophic traumatic and infectious factors are of prime importance. The less infection enters into the picture the greater the success of the obliterative injection method.

From the several thousands of cases in which obliterative injections have been made without accident the conclusion may be drawn that the method is safe. There should be no local or distant focus from which the injected vein may become infected and excessive muscular activity should be avoided for about three weeks after the injection.

In the further discussion other small series of cases were reported. Mention was made of the fact that the intravascular injection of irritative substances causes a true endovenitis with the formation of a very tough and adherent thrombus which is

quite different from an intravascular clot. It was emphasized that at the time of injection the limb must be perfectly at rest and flaccid and after the injection it should remain so for a half hour. If there is an active return flow of blood in a vein injection is contra indicated. This is easily determined by placing two fingers on the vein a short distance apart. If the vein fills promptly on the removal of the lower finger it may be concluded that there is an upward flow of blood in the vein.

FRANK B BERRY M.D.

McPheeters H O and Rice C O Varicose Veins Complications Direct and Associated Following the Injection Treatment A Review of the Literature *J Am M Ass* 1928 xci 1090

The authors emphasize that the treatment of varicose veins by the injection method should not be attempted by those who are not aware of the complications as errors in technique may bring this very satisfactory mode of treatment into disrepute.

The mortality rate following the injection treatment of varicose veins is much less than that following operative treatment. As yet no one solution has been found entirely adequate for every purpose.

The injection treatment of varicose veins has passed the experimental stage and has been proved a very rational procedure which should be accepted to supplant other well recognized methods.

## BLOOD TRANSFUSION

Freezer C R E Hæmatemesis and Purpura Splenectomy Death from Perforation of a Duodenal Ulcer *Guy's Hosp Rep Lond* 1928 lxxvii 465

Melena and Purpura Splenectomy Recovery *Guy's Hosp Rep Lond* 1928 lxxviii 469

Rake C W Preliminary Note on a Case of Hæmatemesis and Spontaneous Ecchymoses *Guy's Hosp Rep Lond* 1928 lxxviii 470

Morton Palmer F W The Hæmorrhagic Diathesis in a Child of Twelve Stimulating Chronic Gastric Ulcer *Guy's Hosp Rep Lond* 1928 lxxviii 473

FREEZER reports the case of a boy nineteen years old who had three attacks of purpuric hæmorrhage in a period of three years. The first two attacks ceased spontaneously. The onset of the last attack was characterized by pain in the left side of the abdomen followed by showers of petechiæ in the skin and bleeding from the nose and mouth. The first night the patient was in the hospital he passed a large tarry stool and there was blood in the urine. An attack of severe uncontrollable epistaxis stopped when fainting occurred.

Although the patient was in a very weakened condition with a hæmoglobin value of only 39 per cent and an erythrocyte count of only 2 200 000 splenectomy was done. After the operation there was almost immediate improvement in the patient's condition and there were no further hæmorrhages. On the fifth day flatulence developed the abdomen

# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

## BLOOD VESSELS

Could E P and Patey D H Primary Thrombosis of the Axillary Vein A Study of Eight Cases *Brit J Surg* 1923 xvi 208

The eight cases of primary thrombosis of the axillary vein reported were those of males ranging in age from twenty three to forty years Six of the patients were between twenty and thirty years old The right arm was affected in all but one case The onset in all cases seemed to have been related to a muscular effort or strain

Most investigators agree that trauma is an important factor The author injected the vein of post mortem specimens with plaster of Paris One experiment showed a groove in the vein at the site of the costocoracoid ligament while in two others a broad deep groove from the pressure of the subclavius was seen In addition a practically constant bicuspid valve was found at this level so situated that pressure of the subclavius muscle caused stretching of the vein wall in the long axis of the valve The authors are of the opinion that a rupture of the vein is the important pathological lesion As predisposing factors expiratory effort and abduction of the arm are of importance

The history and clinical features are usually typical In doubtful cases the possibility of syphilis and tuberculosis should be considered Any bony abnormality will be revealed by the X ray

The prognosis is uniformly good Some disability and swelling of the arm may persist for a time after excessive physical exercise

The treatment consists in rest elevation of the part and massage after two or three weeks

WILLIAM J PICKETT M D

Dawbarn R Y Earlam F and Evans W H The Relation of the Blood Platelets to Thrombosis After Operation and Parturition *J Path & Bacteriol* 1923 xxx 833

After operations and child birth and especially after caesarean section the number of platelets in the blood begins to rise about the fourth day increases to a maximum at about the tenth day and there after falls slowly to the normal level A diminution of platelets is associated with an increase and an excess of platelets with a decrease in the blood coagulation time The time relations of clinical thrombosis and embolism are very similar to those of the platelet reaction These conditions are most frequent at about the tenth day after operation or parturition

The authors found no change in the platelet count after hæmorrhage anaesthesia or bed rest and no constant variation in sepsis The platelet reaction

was excited by fractures A similar rise was noted during convalescence from acute infections such as lobar pneumonia

It is suggested that the features common to the various stimuli which have been identified are tissue injury and the absorption of breakdown product

JACOB M MORA M D

Allen A W and Smithwick R H The Use of Foreign Protein in the Treatment of Peripheral Vascular Diseases The Results of Intravenous Injections of Typhoid Vaccine *J Am Med Ass* 1928 xxi 1161

Non specific foreign protein in the form of intravenous injections of typhoid vaccine was used in the treatment of twenty five cases of peripheral vascular disease

Two of these cases were of vasomotor origin Thirteen were cases of presenile gangrene clinically thrombo angitis obliterans and six were cases of arteriosclerotic gangrene (including those with associated diabetes) Four cases although their chief character lies tended to place them in the vasomotor group showed elements that belonged to other groups and have not been classified The majority of the lesions were far advanced and of long standing Nineteen of the patients were admitted to the hospital with ulceration Only six had pulsating vessels Nineteen were completely disabled

The treatments varied in number from one to fifteen and were given without deleterious effects over periods ranging from three weeks to fifteen months Of the nineteen patients who entered the hospital with complete disability five had major amputations and are included in the group of seven considered unrelieved The authors believe that two of the major amputations might have been avoided by more prolonged palliative procedures Twelve of the nineteen patients with complete disability have been able to return to their former work

Typhoid vaccine given intravenously causes a definite reaction much like that observed following periarterial sympathectomy with definite relief of the pain and improvement in the appearance of the lesion The reaction can be repeated at intervals of seven days or more with subsequent healing of the ulcerations The treatment should be combined with proper hygienic measures and any minor surgical operations that may be necessary

The authors believe that the method described hastens the development of an adequate collateral circulation more effectively than any conservative measures heretofore suggested

JOHN H GARLOCK M D

# PHYSICOCHEMICAL METHODS IN SURGERY

## ROENTGENOLOGY

Desjardins A U Radiotherapy in Actinomycosis  
*Radiology* 1928 21 321

Many cases have been reported which show that the roentgen rays are a potent agent in the treatment of actinomycotic lesions. The earlier and the more superficial the lesions the more rapidly the roentgen rays cause them to undergo involution and disappear.

Actinomycotic lesions of the head and neck can nearly always be eradicated by thorough irradiation, the drainage of purulent collections and the internal use of increasing daily doses of sodium or potassium iodide. Undoubtedly however the irradiation is the chief factor in the cure.

When actinomycosis attacks the intestine or the lungs the disease often becomes extensive before its true character is recognized. In such cases irradiation is seldom successful in effecting a cure but slight or great improvement is not uncommon. Better results could undoubtedly be obtained if the diagnosis were made and the treatment instituted earlier.

## MISCELLANEOUS

Pohle E A and Sawyer R A Physical and Biological Problems in Heliotherapy *Am J Roentgenol* 1928 25 338

Continuing a series of articles describing their studies on the behavior of the mercury vapor lamp Pohle and Sawyer report in this article their experiments dealing with the problem of dosimetry. Because of the importance of establishing a reproducible unit which will follow the biological effect in the emission of ultraviolet from a lamp of this type the experiments included (1) the relation of the biologically important lines in the mercury vapor spectrum during one thousand hours of burner life (2) accurate measurements of the total intensity of the emission of a quartz mercury vapor burner (3) a comparison of corresponding measurements with the photoelectric cell (4) a comparison of a photochemical test to determine its limitations and (5) controls on a sufficient number of patients to establish a skin tolerance dose.

The article is summarized briefly by the authors as follows:

1. A study has been made of the spectral energy characteristics of the mercury vapor lamp. A vacuum type burner at 110 volts A C was used in all investigations. Measurements of the variation of the relative intensity of the lines 3130 3022 2967 2897 2804 2650 2536 A under varying conditions of age of burner and operation are reported.

2. The ultraviolet emission has also been measured by a cadmium cell in uvial glass by the starch iodine test and by the skin erythema. It may be concluded from these investigations that the cadmium cell gives a satisfactory reading of the erythema producing ultraviolet part of the mercury vapor spectrum.

3. A method is proposed by which the calibration of a photoelectric cell in absolute units can be carried out. This permits checking the sensitivity of an individual cell and calibrating other cadmium cells in the same units. The correlation between this absolute unit and the biological effect (skin erythema) has been established. GERTRUDE BEARD

Dixon W E and Heald C B Ultraviolet Rays and the General Public *Brit M J* 1931 1 642

DIXON discusses the nature of radiation the curative rays and the sources from which they may be obtained the physiological action of light and the variations in the sensitiveness of the skin of different persons. As the advertising literature for lamps gives the impression that irradiation by such lamps is a panacea he reviews the dangers of ultraviolet irradiation and emphasizes the necessity for protection of the public against its improper use.

HEALD reports that the value of ultraviolet irradiation when it is properly employed and its dangers when it is improperly employed led the British Medical Association to appoint a subcommittee to consider how best the treatment might be safeguarded and its abuses abolished. The final recommendation of this committee was as follows:

In view of the risks to the public involved in the use of electricity and radiation as methods of treatment by untrained and unqualified persons it is to be desired (1) that suitable courses of training should be organized under medical direction for persons who wish to administer this form of treatment (2) that persons who have satisfactorily followed such a course should be entitled to have their names entered on an approved roll (3) that one of the conditions attached to admission to and maintenance on the approved roll should be abstention from the treatment of any patient except on the responsibility and under the general supervision of a registered medical practitioner and (4) that patients who require electrical or radiation treatment should be referred only to those persons whose names are on the approved roll.

Heald cites evidence of the harm that can result from the use of electricity in the form of X rays ultraviolet rays diathermy etc and in summarizing states that the unqualified electrotherapist should be abolished by law. GERTRUDE BEARD

became distended and tympanic and death occurred suddenly. Autopsy revealed two ulcers on the posterior surface of the duodenum one of which had ulcerated into the lesser peritoneal cavity.

The second article in this group the author of which is not mentioned reports a case of purpura which began with a few petechiae on the limbs and within three months was associated with frequent attacks of bleeding from the mucous membrane of the mouth and intestinal tract. The haemoglobin value was 33 per cent and the red cell count less than 3 000 000. Splenectomy was followed by a rapid return of the haemoglobin to normal.

RAKE reports the case of a pregnant woman with a haemorrhagic diathesis probably due to an earlier puerperal infection. On account of the pregnancy no operative treatment was instituted.

MORTON PALMER reports a case of haemorrhagic diathesis in a child of twelve years which was characterized by rather severe attacks of gastric pain associated with haematemesis submucous haemorrhages and subcutaneous and intramuscular pain probably due to intramuscular haemorrhages. The condition was believed to be Henoch's purpura.

PAUL W. SWEET M.D.

Evans W. H. The Blood Changes After Splenectomy in Splenic Anæmia. Purpura Haemorrhagica and Acholuric Jaundice with Special Reference to Platelets and Coagulation. *J Path & Bacteriol* 1928 xxii 815.

Of eleven cases in which splenectomy was performed the platelets showed a considerable rise in ten. One case of purpura haemorrhagica failed to show a marked rise. In one case of splenic anaemia (Rosenthal's thrombocythæmic type) the platelets rose to a high level which was maintained until death resulted from mesenteric thrombosis.

The clotting time showed a rough parallelism to the platelet level. The clot retraction seemed much more proportional to the platelet count.

There seems to be no correlation between the immediate and transient rise of the granular leucocytes and the slower and more persistent rise of the platelets after splenectomy. JOHN J. MALONEY M.D.

## LYMPH GLANDS AND LYMPHATIC VESSELS

Bertwistle A. P. and Gregg A. L. Elephantiasis. *Brit J Surg* 1928 xi 207.

It is important to distinguish elephantiasis from lymphatic oedema in which no hypertrophy but merely a distention of the cells and spaces is found. Elephantiasis is a hyperplasia of the skin and subcutaneous tissues in a part suffering from lymphatic and probably venous obstruction.

The causative bacterium is apparently a streptococcus which finds lodgment in an area of diminished resistance. The focus may be situated elsewhere in the body. Histologically the disease is manifested first by a soft stage characterized by active subcuticular metamorphosis in which the connective

tissues form plasma cells which are seen throughout the skin and hypodermis and then by a hard stage characterized by an increase in collagenous material in which the soft swelling gives place to hyperplastic tissue. The surface epithelium first shows hyperplasia and later hyperkeratinization.

The condition is preceded by lymphatic and venous obstruction. The latter is caused usually by a thrombosis while the former may be congenital traumatic or infective. The infection may be due to filaria tuberculosis syphilis leprosy granuloma inguinale or malignancy. The author mentions also a type due to toxic absorption of a chemical nature.

Elephantiasis may occur in any part of the body being reported on the scalp face tongue breast penis testes vulva and buttocks. The arms legs and scrotum are affected most frequently. The parts involved in tropical elephantiasis vary with the country.

The onset dates back to an attack of lymphangitis. This may be sudden and accompany or follow an acute illness. If slight residual thickening follows repeated attacks a diagnosis of beginning elephantiasis may be made.

The first stage in the progress of the disease is characterized by a smooth uniform swelling or thickening of the part. During the second stage the skin becomes definitely thickened and acquires an uneven ridged appearance with hypertrophy of the muscles of the part. In the third stage the skin and subcutaneous tissues are greatly thickened and thrown into folds and deep sulci. In the case of the scrotum a diffuse ruggeriness is seen. Weeping fissures and indolent ulcers are sometimes formed.

In the treatment all foci of infection must first be eradicated. The patient should be given bed rest and efforts should be made to improve his health. The use of an autogenous vaccine prepared from fluid withdrawn from the tissues shortly after the interdermal injection of salt solution into the affected area during an attack of fever has been of considerable benefit. Elevation of the affected part must be continued throughout treatment. When the lower limbs are involved some type of elastic hose should be worn. In the absence of inflammation massage is valuable in improving the circulation. When these procedures fail operation is indicated.

Many surgeons have obtained successful results from the Kondoleon operation. The method of Sistrunk which consists in excising a strip of skin subcutaneous tissue and three fingerbreadths of fascia on the external and internal aspect of the leg has also been followed by excellent results. In cases of scrotal enlargement amputation of the scrotum with careful plastic work to assure lymph drainage is indicated. The prognosis as regards life is ordinarily good but in the late stages the patient may be bedridden with deformity or pain.

The author reports six cases with a number of photographs.

WILLIAM J. PICKETT M.D.

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643 644

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## MISCELLANEOUS

### CLINICAL ENTITIES--GENERAL PHYSIOLOGICAL CONDITIONS

McPheeters H O Ulcer Cruris The Etiology Pathogenesis and Treatment *Surg Gynec & Obs* 1928 *xxvii* 409

McPheeters states that ulcer cruris is the end result of the trophoneurotic disturbance in the leg and foot resulting from the stagnation of blood serum in the tissues secondary to varicose veins.

The attempt to cure the ulcer first and the veins second is wrong both in theory and practice.

The varicose veins are obliterated far better by the injection treatment than by operation.

The supportive bandage for the affected extremity with the rubber sponge pressure over the ulceration is the oldest and yet the most efficient treatment of the present day.

Judicious employment of the skin graft at the proper time greatly shortens the period of healing.

To prevent recurrence all long standing cases with extensive involvement must have continued support for long periods of time.

The duration and extent of the support must be decided in each case.

Finally by the use of the described technique all varicose ulcers can be healed and kept healed. If they do not heal it means that the operator has not been keen enough to locate the vein which causes the condition and is often under the ulcer bed or that he has been negligent in giving the extremity the necessary lasting support.

Strong L C The Non Genetic Appearance of Various Types of Neoplasia in Experimental Animals *J Cancer Research* 1928 *x* 205

After many years of brother to sister matings of mice the author has developed a sub strain in which no individual ever developed any type of neoplasia although the mice were kept under conditions ideal for neoplasia and lived far beyond the so-called cancer age. Since in sub branch lines of the same stock there were produced certain individuals which developed certain types of carcinoma it cannot be said that the stock is non susceptible.

There was developed also by brother to sister matings another pedigree stock of which no individual in direct descent ever developed neoplasia.

When 2 individuals thus derived were crossed a peculiar type of neoplastic tissue a tumor melanotic in character resulted. This was the only melanotic tumor observed by the author in a laboratory animal in ten years.

The mouse with this tumor was bred to his own sister and the ensuing 12 daughters were mated back to the father. In this back cross generation

of 156 offspring no individual developed the same type of tumor.

By the same method 2 other tumors were developed one a small round cell sarcoma and the other an aleukemic lymphoblastoma.

The author concludes that this type of tumor is not due to a simple mendelian recessive unless an extremely large number of mendelian units is assumed. He believes it may be explained as a somatic mutation. GEORGE A COLLETT M.D.

### GENERAL BACTERIAL PROTOZOAN AND PARASITIC INFECTIONS

Findlay G M Histamine and Infection *J Path & Bacteriol* 1928 *xxv* 633

Findlay's experimental work leads him to suggest that the well known relationship between injury and the localization of organisms in injured tissue is due to the liberation by injured tissue of histamine or a histamine like substance which causes dilatation of the capillaries and increased permeability of the capillary endothelium with the result that organisms present in the blood stream are enabled to escape into the surrounding tissues.

This theory is supported by experiments with the viruses of fowl pox vaccinia and the Rous sarcoma. *Staphylococcus aureus streptococcus and pneumococcus*. JACOB M M D M.D.

Long P H Ollitsky F K and Stewart F W The Role of Streptococci in Experimental Poliomyelitis of the Monkey *J Exper Med* 1928 *xli* 431

Several investigators have reported the isolation of streptococci from poliomyelitic tissues of man and of animals. The authors study was undertaken especially to determine the source of the streptococci and their relation to the etiology of the disease. It included a comparison of the strains of streptococci isolated from monkeys affected with poliomyelitis.

According to Bull the streptococci recovered from poliomyelitic tissues have no etiological or pathological relationship to the virus of poliomyelitis or curing only as secondary invaders in the disease. Smilie and Amoss suggested that the bacteria may be agonal invaders.

The results of the authors experiments suggest that the streptococci are contaminants introduced into the cultures during the grinding of the tissues. Their source may therefore be the air of the room in which the cultures are made. The authors could not determine any etiological relationship of the streptococci to poliomyelitis and concluded that there is a true virus of poliomyelitis in man and the monkey. SAMUEL KAHN M.D.

# BIBLIOGRAPHY of CURRENT LITERATURE

NOTE—THE BOLD FACE FIGURES IN BRACKETS AT THE RIGHT OF A REFERENCE INDICATE THE PAGE OF THIS ISSUE ON WHICH AN ABSTRACT OF THE ARTICLE REFERRED TO MAY BE FOUND

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- Avulsion of the scalp A G BANKS *Brit M J* 1928 ii 893
- Skull defects repaired by tibial grafts F A HADLEY *J College Surg Australasia* 1928 i 708
- Self inflicted wounds through the skull followed by recovery J J LEVIN *Brit M J* 1928 ii 930
- Late results of trephination of the cranium for traumatic lesions T ALAJOUANINE J MAISONNET and D LETHUILLIS *J de chir* 1928 xix 397
- A case of perforating sarcoma of the cranium J BARRAQUER *Revue med Par* 1928 xxxvi 11
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- Areptic cavernous sinus thrombosis H C TODD *J Oklahoma State M Ass* 1928 xii 386 [192]
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- Lupoid chancre of the chin with septiceamic manifestations C A AGASARAZ and J V JIMÉNEZ *Bol inst de clín quí* 1928 iv 320
- Some orthopedic problems of the lower jaw with special reference to unilateral shortening H IVY and L CURTIS *J Bone & Joint Surg* 1928 x 645 [192]
- An unusual fracture of the superior maxilla the evaluation of the disability O L GÓMEZ *Rev de especialidades Asoc méd argent* 1928 iii 531
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- Examination of the eyes and eyesight of young children T WHITTINGTON *Brit M J* 1928 ii 830
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- Gentian violet in ophthalmology R J SISOV *Am J Ophth* 1928 vi 893
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APRIL, 1929

# International Abstract of Surgery

*Supplementary to*  
**Surgery, Gynecology and Obstetrics**

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Editors and Business Offices: 54 East Erie St. Chicago Illinois U.S.A.  
Publishers for Great Britain: Baillière Tindall & Cox 8 Henrietta St. Covent Garden London W.C.

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# INTERNATIONAL ABSTRACT OF SURGERY

APRIL 1929

## LANDMARKS IN SURGICAL PROGRESS

By IRVING S. CUTTER, M.D., Sc.D., CHICAGO

Dean, Northwestern University Medical School

### NATHAN SMITH AND OVARIOTOMY

HERBERT THOMAS, M.D., F.A.C.S., NEW HAVEN, CONNECTICUT

AMERICA'S place in the history of ovariectomy is one of acknowledged supremacy and Ephraim McDowell is one of the immortal names not born to die. Associated with the advent of this surgical procedure is the name of another American surgeon whose contribution is remarkable and who should share in no small measure the honor due to pioneers in surgical achievement. Nathan Smith's life was so resplendent with achievement in other fields that his part in the development and establishment of ovariectomy has been somewhat overlooked.



NATHAN SMITH  
(1762-1829)

stead of suturing it to the abdominal wall.

Nathan Smith was in no sense a backwoods surgeon. Like McDowell his training was unusual for that day. It included a Harvard and an Edinburgh background and he was familiar with and performed many times the acknowledged surgical procedures of his day. As a lithotomist he lost but two patients in thirty-two operations. He was an unusually successful cataract operator and made far-reaching contributions to our knowledge of fractures, particularly those of the thigh. He is said to have been the first to perform staphyloplasty for cleft palate. His great contributions to medicine and medical education do not

need emphasis here.

The operation for the removal of an ovarian cyst in 1821 was performed when Nathan Smith was 59 years of age while he was Professor of Physics and Surgery at Yale College. It was performed at Norwich, Vermont, upon a Mrs. Strobbridge. The distance of this town from New Haven well illustrates the penitence nature of the successful surgical practice of that day. With

Nathan Smith the omnipresent genius in New England medicine performed ovariectomy in 1821 with no knowledge that McDowell had preceded him. Indeed so slow was medical news in that day that ten years later his son wrote I am not confident that the first operation by Doctor McDowell was subsequent to that of my father. This operation by Nathan Smith in 1821 is the more remarkable when we realize that he anticipated modern surgical technique by dropping the tumor pedicle into the abdominal cavity in

## EDITOR'S COMMENT

A STATISTICAL study of all the fractures treated at the Pizzoli Institute in Bologna during the years from 1899 to 1926 and a more detailed study of the fractures involving joints 42 per cent of the total number forms an interesting and instructive contribution to the subject of fracture pathology and treatment.

Of the 162 fractures involving the upper end of the humerus reported by Zanoli (p. 360) 90 per cent fell into one of three groups—uncomplicated fractures of the surgical neck (50.6 per cent), fractures of the greater tuberosity with displacement of the head of the humerus (30.2 per cent) and fractures of the surgical neck with displacement of the head (9.2 per cent). Fractures of the head of the humerus of the anatomical neck, uncomplicated fractures of the greater tuberosity and epiphyseal separations altogether formed but 10 per cent of the entire number. Of interest too is the fact that no fracture was a compound one and in only 2 of the 162 fractures were there associated nerve lesions.

Of the 328 fractures about the elbow reported by Camurati (p. 361) 112 (34.4 per cent) were supracondylar fractures, 50 (15 per cent) involved the external condyle, 37 (11 per cent) involved the internal condyle and 22 (6.7 per cent) were T or Y shaped fractures (supra and intercondylar). In 20 cases (6 per cent) there were complicating primary nerve lesions, in 40 cases (12 per cent) complicating dislocations and in 67 (20.4 per cent) excessive bone formation at the site of fracture.

Two hundred and forty-two fractures of the neck of the femur reported by Dusi (p. 363) constituted 19 per cent of all the fractures of the lower limb and 64.4 per cent of all fractures of the femur, an unusually high percentage. Fifteen cervical and 5 cervicotrochanteric fractures occurred in individuals under forty years of age. The results after non-operative treatment were excellent or good in 50 out of 96 cases and after various forms of operative treatment in 17 out of 40 cases.

One hundred and ninety fractures of the maleolei are also reported in detail by Faldini (p. 365), 44 fractures involving the knee by Zanoli (p. 364) and 186 fractures involving the wrist by Soldi (p. 361).

Haberer's discussion of some phases of the surgery of the biliary tract (p. 337) emphasizes particularly the occasional presence of aberrant ducts passing directly from the liver into the wall of the gall bladder. Such ducts he believes were present in one case in which after careful removal of an intact gall bladder containing pus pus was seen oozing in drops from the peritoneal covering of the liver. Haberer does not think it possible that in this case the pus could have come from such delicate structures as the lymphatic vessels. He believes that the presence of such ducts accounts for the occasional leakage of large amounts of bile following cholecystectomy and careful ligation of the cystic duct.

Francis' comprehensive review of *lecllus tularensis* infection based upon 679 cases and his description of four clinical types of the disease (p. 380) indicate both its extensive distribution and the widespread interest that his studies of tularæmia have aroused in the medical profession. It is unusual that the etiology, bacteriology and symptomatology of a disease should be so carefully studied so completely understood and that this knowledge should be disseminated among the entire medical profession in so brief a period of time as has been the case with tularæmia and the credit for this signal achievement belongs to Francis of the United States Public Health Service.

A number of other abstracts in this month's issue of the *INTERNATIONAL ABSTRACT OF SURGERY* deserve particular mention. Baroni's studies on the experimental production of acromioclavicular (p. 380), Coley's report of the end results of the treatment of Hodgkin's disease and lymphosarcoma particularly with roentgen and toxin therapy (p. 371), Forsell's review of the therapeutic methods in use and the results secured at Radumhemmet in Stockholm (p. 375), Jacobbe's discussion of the therapeutic results of articular pneumarthrosis in intra-articular lesions of the knee (p. 358), Foster's clear cut discussion of intestinal obstruction (p. 330) and Short's review of the symptoms resulting from inflammation of the mesenteric lymph glands (p. 326) are a few of many helpful and stimulating papers which have recently appeared in American, British and Continental journals.

domen but it adhered to no part except the proper ligament which was not larger than the finger of a man. I have seen two other ovarian sacks which were taken from patients after death. They had been tapped several times the sacks were equally unattached except to their proper ligaments. Hence I inferred that in a case of ovarian dropsy while the tumour remained moveable it might be removed with a prospect of success. The mode of operating practised in the above case is the same that I have described to my pupils in several of my last courses on surgery. The event has justified my previous opinions.

I am unaware that present day portrayals of surgical procedures are more perfect than this description by Nathan Smith of his operation for ovarian tumor. When we consider the actual technique of the operative procedure and the fact that he was ignorant of precedence Nathan Smith's contribution to ovariectomy becomes not

inconsiderable. In conclusion we should remember that his life was far greater than that of the successful surgeon or even the pioneer in gynecology. Nathan Smith has been finely eulogized by Dr. William H. Welch in a Yale address as 'Famous in his day and generation he is still more famous today for he was far ahead of his times and his reputation unlike that of so many medical worthies of the past has steadily increased as the medical profession has slowly caught up with him. We now see that he did more for the general advancement of medical and surgical practice than any of his predecessors or contemporaries in this country. He was a man of high intellectual and moral qualities of great originality and untiring energy an accurate and keen observer unfettered by traditions and theories, fearless and above all blessed with an uncommon fund of plain common sense.

A r XIV C u f O r r e n D p r y a n e f f j r e m o v e d b y a  
S e g a l O p e r i o n C o m m e n t e d b y D N a t h a n S m i t h  
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p r e t a l l y o n p g D a a n h e p l o d l a r g e r m a n  
t h r i g h t u f f h b e m t w c o n d u b y m b e n d  
I d p r o d u c t i o n t h t o t a n t h o g h a

Faustimile excerpt from Nathan Smith's original article  
The American Medical Re order Volume V 1832

the exception of Rhode Island Nathan Smith's  
endeavors may be said to have encompassed all  
New England

It is the chief purpose of this communication  
to set down again the classical description which  
was given to the operation for ovariectomy by  
Nathan Smith

The subject of the operation a Mrs Strobbridge  
of Norwich Vermont was aged 33 years Her  
previous history is summarized

Seven years before the operation she had  
noticed a small tumor in her right side situated  
in the right iliac region She had borne five children  
altogether—two previous and three subsequent  
to her discovery of this tumor Her youngest  
child was ten months of age and was nursing at  
the breast at the time she submitted to the  
operation Three times during this seven year  
period before operation the tumor is said to have  
burst inside and decreased in size The last time  
this was the result of a fall It however is said  
to have refilled very rapidly and from that time  
until the operation had continued to increase in  
size It was unaffected by the delivery of her last  
child which was ten months previous to the

operation Her general condition was not greatly  
affected by the tumor but the size of the tumor  
is said to have incommoded her in the ordinary  
duties of her family especially in bending The  
description follows in Nathan Smith's own words

Having decided on the operation and determined  
the mode of operating on the 5th of July in the  
presence and with the assistance of Doctors Lewis  
Mussey Dana and Hatch I commenced the opera-  
tion as follows

The patient being placed on a bed with her head  
and shoulders somewhat raised an assistant raised  
up the tumor to the middle of the abdomen and  
held it there I commenced an incision about an  
inch below the umbilicus directly in the linea alba  
and extended it downwards three inches I carried  
it down to the peritoneum and then stopped till the  
blood ceased to flow which it soon did I then di-  
vided the peritoneum the whole extent of the exter-  
nal incision The tumor now exposed to view was  
punctured a cannula introduced and seven pints of  
a dark colouredropy fluid was discharged into a  
vessel About one pint was spilt so that the whole  
fluid was about eight pounds Previous to tapping  
the tumor by inserting my finger by the side of it  
I ascertained that it adhered to some extent to the  
parietes of the abdomen on the right side between  
the spine of the ileum and false ribs After a cut-  
ting the fluid I drew out the sack which brought out  
with it and adhering to it a considerable portion of  
the omentum This was separated from the sack  
with the knife and two arteries which we feared  
might bleed were tied with leather ligatures and  
the omentum was returned By continuing to pull  
out the sack the ovarian ligament was brought out  
this was cut off two small arteries secured with  
leather ligatures and the ligament was then re-  
turned I then endeavoured to separate the sack  
from its adhesions to the parietes of the abdomen  
which occupied a space about two inches square  
this was effected by a slight stroke of the knife at  
the anterior part of the adhesion and by use of the  
fingers The sack then came out whole excepting  
where the puncture was made and I should think  
it might weigh between 2 and 4 ounces The inci-  
sion was then closed with adhesive plaster and a  
bandage was applied over the abdomen No un-  
favourable symptoms occurred after the operation  
in three weeks the patient was able to sit up and  
walk and has since perfectly recovered

I was induced to undertake this operation from  
the following considerations The patient though  
her health was not greatly impaired was sensibly  
affected by the disease She was quite certain that  
the increase of the tumor in a given time was  
augmented probably at no very distant period it  
would have destroyed her I had at o had an  
opportunity to dissect the body of a patient who  
had died of ovarian dropsy who had been tapped  
seven times In this case the sack was found to be  
in the right ovary which filled the whole ab-

Brown R C Cranioplasty by the Split Rib Method *J College Surg Australasia* 1928 1 238

The graft used in Brown's method of cranioplasty is the outer half of a rib which is split *in situ*. Brown regards the tibial graft as unsatisfactory because it does not conform to the shape of the cranial vault and because its removal often disables the patient for months. In reporting twenty one cases in which a tibial graft was applied to the skull Morrison stated that all of the patients complained more of the pain in the leg than of the pain in the head.

None of the patients subjected to Brown's operation complained of the thoracic injury and in all who have been examined subsequently the regenerated rib was found to be the replica of its fellow on the opposite side. Most of the repairs have become somewhat flattened in the course of time but Brown believes that a more consistent restoration of outline will be obtained as the result of experience. JACOB M. MORA M.D.

Lederer F L Prosthetic Aids in Reconstructive Surgery About the Head Presentation of a New Method *Arch Otolaryngol* 1928 viii 531

In cases in which it is impossible to obtain good results from reconstructive surgery about the head the author employs prostheses. He gives the formula for the manufacture of the material used and describes the procedures by which the prostheses are made and applied. J FRANK DOUGHERTY M.D.

## EYE

Rodin F H Perforating Eye Injuries of Young Children *California & West Med* 1928 xxx 338

Rodin reports three cases of perforating injuries of the eyeball in children. In the first enucleation was done nineteen months after the injury because of blindness and pain. In the second the pupil became completely obliterated by adhesion of the iris to the corneal scar. In the third a traumatic cataract developed.

As a rule such injuries cause prolapse of the iris. Injury to the lens capsule is common and there is great danger of infection.

In the treatment proper cleansing of the eyeball and eyelids is of great importance. Atropin should be instilled, the prolapsed iris replaced or removed and the wound excised. A bandage should then be applied and the patient confined to bed.

LYMAN A. COFFEY M.D.

Weeks W W The Technique of the Mouton Operation for Ptosis *Am J Ophthalm* 1928 xi 879

Following a review of the literature on the Mouton operation for ptosis Weeks describes a suture for the superior rectus tendon slip which he has found to be secure. The tendon slip is carried through a subconjunctival tunnel onto the anterior surface of the tarsus and supported by a fold of the levator tendon. L. M. ALLEN M.D.

Wiener M The Correction of the Defect Due to Third Nerve Paralysis *Arch Ophthalm* 1928 lvi 597

For correction of the deformity caused by paralysis of the third nerve surgical treatment has not been very satisfactory. Jackson and Dransart quite independently suggested transference of the tendon of the superior oblique muscle to take the place of the paralyzed internus. Dransart has transferred the tendon of the superior oblique muscle to the external rectus.

Wiener reports two cases of third nerve paralysis which he operated upon with good results by suturing the superior oblique muscle under the insertion of the internal rectus and reattaching the superior rectus. VIRGIL WESCOTT M.D.

Smith A R Concomitant Strabismus and Heterophoria *Brit J Ophthalm* 1928 xii 581

Smith states that the cause of convergent squint is the arrest of development of binocular vision in hypermetropia. Many hypermetropic children make good progress in acquiring binocular vision at games out of doors and in ordinary use of the eyes but when they are required to use their eyes for prolonged near vision their sight is not sufficiently clear or the effort is too great for one eye and one-eyed sight results. The unused eye becomes less and less sensitive and the binocular vision acquired out of doors is lost. One-eyed vision is established and deviation of the unused eye follows. Unless attention is paid to the poor eye in the fitting of glasses its sensitivity will not be restored.

In heterophoria the same sequence of events occurs but the patient is able to retain the binocular vision he has acquired.

The treatment indicated is training of simultaneous vision. The author says: "Bring about sight of the same object with both eyes."

THOMAS D. ALLEN M.D.

Duggan J N A Case of Rhinosporidium Kinealyi *Brit J Ophthalm* 1928 xii 526

Rhinosporidium kinealyi affects stratified epithelium forming cysts lined by flat epithelium ranging from 3 to 4 micra in diameter and containing from eight to fifteen spores. The cysts burst discharging spores and are then invaded by leucocytes.

In the case reported a small red papule in the region of the semilunar fold of the right eye had grown in a period of six months to a papilloma like neoplasm covered by a thickened scab which prevented closure of the lids. The tumor had a broad base extending to within 4 or 5 mm. of the limbus but not involving the sclera. It was dark red fairly vascular and not painful unless touched. Vision of the eyeball and the lymphatic glands in the vicinity were normal. Before a microscopic examination was made the growth was believed to be a papilloma. It was removed and patient sent home six days later. LESLIE L. MCCOY M.D.



# ABSTRACTS OF CURRENT LITERATURE

## SURGERY OF THE HEAD AND NECK

### HEAD

McCreery J A and Berry F B. A Study of 520 Cases of Fractures of the Skull. *Ann Surg* 1928 lxxxviii 890

The injuries reviewed by the author occurred in adults. The causes were a fall in 179 cases, an unknown cause in 140 cases, an automobile accident in 110 cases, a blow in 63 cases, a street car accident in 14 cases, a crushing injury in 5 cases, a horse and wagon accident in 4 cases, a train accident in 3 cases, and a bullet injury in 3 cases.

The clinical classification of the fractures was as follows: base 347, vault 90, vault and base 57, undetermined 22, compound 37, and depressed 27. In 4 cases no fracture was demonstrable.

Scalp wounds and hematomata were of considerable aid in indicating the sites of the skull and brain injury, as well as the location of contrecoup injuries. In surprisingly few instances, however, did the wounds lead directly to the fracture.

Bleeding from the ear through a ruptured drum is of significance. In cases of head injury with bleeding from the drum or a laceration deep within the external meatus, the treatment should be that given for fracture of the skull and the possibility of the development of meningitis should be borne in mind.

The fixed pupil was a serious sign. When the pupils were unequal, the larger pupil indicated the side of the lesion with considerable exactitude. The condition of the pupils often changed rapidly and was a sign of considerable value in determining the patient's progress.

The cranial nerves most often involved were the seventh and eighth. The third and sixth were affected next most frequently, and the first was involved least frequently.

Generalized paralysis or convulsions were an indication of severe concussion associated with more or less brain laceration. In cases with these sequelae, the coma was usually deep, the pupils were fixed, the blood pressure was low, and death occurred after a few hours.

Localized weakness or spasticity—always sought for as an indication for operative intervention and accompanied by changes in reflexes—was of great aid in the determination of the site of the injury. It was often impossible to tell whether the condition was due to extradural bleeding or to brain laceration as the typical syndrome of epidural hemorrhage was conspicuous in its absence.

Practically all patients with a fracture of the skull complained of headache, and at some time or not in

coma present the irritability characteristic of meningeal irritation. Vomiting is of little importance.

The X-ray findings, when positive, are of great value, but the authors disregard a negative report.

The authors believe that the danger of spinal tap has been exaggerated and that the advantages to be gained from the procedure in both diagnosis and treatment outweigh the risks.

While the presence of blood in the spinal fluid means only subarachnoid hemorrhage, if from brain laceration or pia hemorrhage, it is rarely found in traumatic cases without a fracture, and as it is in itself an indication of brain injury, should be considered an indication for treatment of such an injury.

The treatment of the cases reviewed included: (1) the treatment of shock, (2) physical examination with especial reference to the eyes and neurological signs, (3) cleansing and exploration of scalp wounds, (4) blood pressure readings, (5) spinal tap, (6) ophthalmoscopic examinations of the fundi, (7) treatment for increased intracranial pressure, (8) rest in bed for three weeks, and (9) operation.

In the majority of cases, the pressure was reduced to normal by one early spinal tap. When this was inadequate, magnesium sulphate by mouth or rectum was used in the milder cases, but in the more severe cases repeated spinal taps were found most effective.

When sedatives were required, paraldehyde, sodium bromide, chloral hydrate, and luminal were the drugs most commonly used.

On discharge, the patient was instructed to rest for long periods each day.

In the early stages, while the patient is still in shock, operation is probably unwise even when there are localizing signs.

In the cases of patients who died within twenty-four hours, the picture was that of severe concussion, usually with no signs of local pressure. The patients were unconscious and the pupils were fixed, usually dilated, and occasionally unequal. The reflexes were abolished and there was a generalized paralysis. Respiration was usually deep and stertorous, gradually becoming of the Cheyne-Stokes type, while the pulse never fell and bounding gradually became more feeble and rapid. Autopsy in these cases usually showed extensive brain laceration and not infrequently localized epidural or subdural hemorrhage, of which there had been no localizing signs.

Meningitis occurred in seventeen cases. The blood pressure and pulse rate were of little value in the determination of intracranial pressure.

MORTIS H. KAPLAN, M.D.

tends to recur and to form metastases. In a case in which enucleation was done eleven years after excision of the tumor death resulted from general metastasis six years later.

Young reports the case of a man thirty years of age who was hit in the eye nine years previously but had no sequelae from the injury until one year later when a small growth 2 mm. in diameter appeared in the anterior chamber. Two years later vision was 6/9 and the mass which had grown slightly was brown and showed many blood vessels on its surface. Enucleation was then advised.

When the patient was examined by the author shortly before the enucleation and nine years after the accident the brown mass almost completely filled the anterior chamber but there was no inflammation the cornea was clear and the iris reacted to light and convergence.

The pathologist reported the tumor to be a spindle shaped melanotic sarcoma arising from the iris and lying on the posterior surface of the cornea but not involving the ciliary body.

THOMAS D. ALLEN, M.D.

**Juler F. Bilateral Obstruction of the Central Retinal Arteries.** *Bru J J* 1928 p 791

The case reported by Juler was that of a man fifty years of age who was suffering from cardio-renal disease and hypertension. Obstruction of the central artery of the left eye was followed one month later by similar obstruction in the right eye. The condition was believed to be a thrombosis or endarteritis rather than embolism.

Thrombosis is suggested by the fact that during sound sleep the blood pressure is lowered and the condition under discussion is first noticed when the patient awakens but MacWilliam has shown that during disturbed sleep the blood pressure is frequently increased even more than by exercise.

In recent cases of such obstruction of the central retinal arteries treatment with amyli nitrate and massage has sometimes seemed to cause improvement.

SAMUEL A. DUKK, M.D.

**Chou C. H. Angiopathia Retinae Traumatica (Purtscher) With Some Remarks on Pigment Migration.** *Bru J Ophth* 1928 xi 570

A sixteen year old boy was hit on the right orbit by a ball. After the injury a lymphorrhagic area developed in the retina along the course of the superior temporal vessels arching over the macula and extending from the disk margin for 5 or 6 p.d. About ten days later a fine pigmentation appeared throughout the involved part of the retina and on the optic disk.

When the patient was first seen by the author about a week after the accident there was a minute hemorrhage just above the macula. This quickly became absorbed leaving no trace. Subjectively there were central relative and paracentral absolute scotomata corresponding in size to the lesions observed.

THOMAS D. ALLEN, M.D.

**Silva R. Surgical Technique for the Removal of Subretinal Cysticercus.** *Am J Ophth* 1928 xi 867

The author reports three cases of subretinal cysticercus. In the first the cysticercus occupied the macular region and extended to the optic nerve. In its surgical removal the external rectus was temporarily detached at its insertion the eye strongly rotated nasally and the sclera cautiously incised over the cyst until herniation of the choroid occurred. By careful manipulation the cysticercus was then removed without rupture of the sac in spite of the presence of considerable fibrous tissue. Healing was uneventful.

In the second case the cysticercus had migrated from one position to another beneath the retina. It was removed by dissection of the sclera over its second position. Normal central vision was retained.

In the third case the cysticercus was free in the vitreous. Operation was refused. Five months later enucleation of the eye was necessitated by intense iridocyclitis. No evidence of suppuration was found. The pathological diagnosis was dead cysticercus in the vitreous.

THOMAS D. ALLEN, M.D.

## NOSE AND SINUSES

**Harter J. H. Chronic Suppuration of the Maxillary Sinus Including Oral and Nasal Operative Cure.** *Arch Otolaryngol* 1928 viii 523

For the treatment of chronic suppuration of the maxillary sinus the author prefers the Denker operation performed under local anesthesia as it eradicates disease in the anterior naso-antral angle causes minimal hemorrhage and shock and requires less postoperative care than other procedures.

The usual objections to this operation are based on the densensitization of the teeth the alleged sudden release of the accumulated secretion the difficulty of the technique and the weakening of the bony framework of the face. According to Harter these criticisms are fallacious.

The densensitization is temporary and does not affect the vitality of the teeth. The release of accumulated discharge when the patient lowers his head is unusual when the operation is properly performed. The difficulties of the technique are lessened by local anesthesia. The weakening of the bony framework of the face is not serious.

Harter regards the intranasal operation with disfavor. He states that the Caldwell-Luc operation has a tendency to be followed by narrowing or closure of the naso-antral window thickening of the naso-antral wall and the formation of irregular suppurative tracts within the newly formed bone.

W. M. PATON, M.D.

**McGregor G. W. The Formation and Histological Structure of Cysts of the Maxillary Sinus.** *Arch Otolaryngol* 1928 viii 505

Secretory dental and mesothelial cysts of the maxillary sinus are of infectious origin. The primary

**Berghausen O Tuberculin Therapy In Ocular Tuberculosis** *Arch Ophth* 1928 lvi 583

The author states that infection of the eye by the tubercle bacillus is usually metastatic. The ocular process may show three stages (1) a small nodule usually in the iris (2) a violent uveitis and (3) a chronic torpid iridocyclitis with the formation of transparent nodules. The second stage is often absent or of very short duration.

The condition must be differentiated especially from syphilis by physical examination and serological tests including tests with tuberculin. Of the latter the intradermal and subcutaneous tests are recommended.

Berghausen reports several cases in the majority of which marked improvement followed the administration of tuberculin. **SAMUEL A. DIER, M.D.**

**Gifford S R Some Modern Preparations Used in the Treatment of Glaucoma** *Arch Ophth* 1928 lvi 612

Gifford reviews the experimental and clinical work done in the treatment of glaucoma during the last few years. He discusses the effects of adrenalin and its derivatives, derivatives of ergot, hypertonic solutions, calcium and barium salts and pituitrin. He states that the meagreness of clinical reports on the use of these drugs prevents definite judgment as to their value, but all of them have interesting possibilities. **VIRGIL WESCOTT, M.D.**

**Wolff, E A Large Implantation Cyst of the Conjunctiva** *Proc Roy Soc Med Lond* 1928 xvi 22

Wolff reports the case of a man of sixty years who gave a history of having been hit in the right eye five years before. Two years later a swelling began at the site of the wound and steadily increased in size.

On examination there was found a cystic translucent swelling which protruded from between the eyelids and prevented their closure. The whitish scar of the original injury could be seen in the conjunctiva near the cornea. The cyst was taken out whole. It lay between the conjunctiva and the sclera and was loosely adherent to both except at one point. It contained clear viscid mucous fluid. On microscopic examination the wall was seen to be lined by several layers of squamous epithelium. **LYMAN A. COPPS, M.D.**

**Chou C H A Typical Form of Familial Degeneration of Cornea (Fleischer)** *Arch Ophth* 1928 lvi 574

The case reported by Chou was that of a woman twenty-seven years old who complained of eyestrain. In each cornea there were many gray flake-like opacities with clear centers. On slit lamp examination these were found to be irregular in outline and to be formed of many dust-like particles. The nerves of the cornea were much more distinct than usual. All of the opacities were beneath the surface of the cornea, mostly in the stroma, under Bowman's

membrane. The endothelium was normal peripherally but showed early signs of degeneration in the central part of the cornea. The corneal sensibility was somewhat reduced but the general physical examination was entirely negative. **SAMUEL A. DIER, M.D.**

**Derby G S The Nature of So Called Koepple Nodules** *Arch Ophth* 1928 lvi 561

In a case reported by the author that of a man forty-three years of age, vision was 5/100 in the right eye and 20/15 in the left eye. In the right eye the lens was cataractous and there were many deposits on the posterior surface of the cornea but no active inflammation. The iris was somewhat discolored and especially around the pupillary margin there were many translucent (Koepple) nodules which extended slightly beyond the lesser circle. There was slight atrophy of the iris at the margin. The left eye showed vitreous opacities and a spot of choroidal atrophy.

The history and the findings of physical examination ruled out syphilis and led to a diagnosis of tuberculosis.

A combined extraction was done on the right eye with very good results. Verhoeff, who examined the excised piece of iris histologically, reported that it was free from lymphatic nodules and tubercles and that the stroma was infiltrated with plasma cells which also composed the nodules.

Similar nodules may be found in sympathetic disease, leprosy and tropical syphilis but are not seen in the iris due to focal infection or ordinary syphilis. They are very strongly suggestive of tuberculosis. **SAMUEL A. DIER, M.D.**

**Chance B A Case of Sarcoma of the Iris** *Am J Ophth* 1928 xi 839

The case reported was that of a man forty-two years of age who had had a mass in his iris for twenty-seven years. The mass was yellow brown and dome-shaped. It occupied the angle of the anterior chamber and was attached to the iris in the mid zone by a narrow base. It was somewhat nodular but not transparent or translucent. On its surface there were fine capillaries and vascular blotches. There were no signs of inflammation. The fundus and the tension were normal. Vision was 6/6. The mass was removed.

On examination it was pronounced a mixed-cell sarcoma with melanotic pigment. Eighteen days after its excision the globe was enucleated. No further involvement of the eye was found and no general metastases have been discovered in the subsequent six years. **THOMAS D. ASLEY, M.D.**

**Young, C A Primary Melanosarcoma of the Iris** *Am J Ophth* 1928 xi 864

Primary melanosarcoma of the iris is a relatively rare condition. It occurs as a rule after middle age and is characterized by slow growth and late inflammatory symptoms. It is relatively benign but

Looper E A and Schneider L V Laryngeal Tuberculosis A Study of 500 Patients Treated at the Maryland State Sanatorium from 1923 to 1928 *J Am M Ass* 1928 xci 1012

As laryngeal involvement is the most serious complication of pulmonary tuberculosis frequent throat examinations should be made in cases of tuberculosis of the lungs as the earlier the diagnosis is established the more promising the prognosis. Of 3 227 patients with pulmonary tuberculosis who were treated by the authors 15.5 per cent showed laryngeal complications. These occurred more frequently in men than in women and were most common between the ages of twenty and forty years.

The use of the voice seems to play no part in the development of tuberculous laryngitis. Pathologically the condition is secondary to the pulmonary infection and affects in decreasing order of frequency the vocal cords and ventricular bands the cords and arytenoids and the posterior wall and interarytenoid sulcus. The most common symptoms are a change in the voice parasthesias pain reflex otalgia and dysphagia. The condition must be differentiated from catarrhal laryngitis luetic infection and carcinoma.

The prophylaxis includes periodical laryngoscopic examinations of tuberculous patients and all possible conservative measures for the correction of pathological conditions in the upper respiratory tract. Active treatment is best given in a sanatorium. Absolute vocal rest is essential. In the local treatment the use of the electric cautery has been so successful that it is now preferred by the authors to all other methods. It was followed by improvement

with healing in 65.5 per cent of the authors' cases with moderate lung involvement and in 26.5 per cent of those in which the lung condition was far advanced. Even in hopeless cases it is of great value as it relieves pain and coughing. The cauterization is done under local anesthesia by the indirect method at monthly interval. Contra indications are a high fever marked asthenia and a high blood pressure.

GEORGE R McVILLIFF M D

Thomson Sir St C Intrinsic Cancer of the Larynx Operated on by Laryngofissure Immediate and Ultimate Results *Arch Otolaryngol* 1918 viii 377

The author defines laryngofissure as practiced by himself in cases of intrinsic cancer of the larynx as a partial laryngectomy in which the anterior commissure in front part of the arytenoid behind the ventricular band above and the subglottic area below are excised with the perichondrium lining the thyroid cartilage.

He reviews seventy cases in which this operation was performed. The patients ranged in age from thirty to more than eighty years. Sixty three were males. Three died within four days after the operation seven died from malignant disease in another part of the body eleven died from a local recurrence and eighteen died from other causes but forty eight were still alive and apparently well at the end of three years.

The author concludes that if intrinsic carcinoma of the larynx is diagnosed early the best treatment is laryngofissure.

MANFOR R WALTZ M D

cause of secreting cyst is damage to the cilia of the gland tubules by infection. Edema infiltration and fibrosis are contributory factors. The lining epithelium of secreting cysts undergoes various pathological changes. These cysts commonly occur in the maxillary sinus and are frequently seen in roentgenograms.

Dental cysts arise from epithelial rests which are stimulated into activity by infection. Large phagocytic cells or clasmotocytes have been demonstrated by the author in their contents. These cells are derived from the monocytes and suggest a tuberculous factor in the production of the cysts.

Mesothelial cysts are due to the accumulation of tissue fluids in the tissue spaces. They are found in an edematous mucous membrane and are filled with tissue fluid. Secreting cysts contain mucus.

Cysts should be viewed with suspicion as they occur only in the presence of a pathological process and may act as a focus of infection.

The article contains a number of photomicrographs. W. M. PATON, M.D.

### NECK

Carson A. and Dock W. The Effect of Iodine upon Experimental Hypertthyroidism in Man. *Ann J M Sc* 1928 clxvi 701

In the authors' studies of the effects of iodine in experimental hypertthyroidism in man the equivalent of the hypertthyroid state was induced in four persons (two of them the authors) by the ingestion of Lugol's extract. Iodine was given in the form of Lugol's solution. Observations were made on the pulse rate, the basal metabolic rate and the symptoms.

All four subjects went through a mild hypertthyroidism with its concomitant symptoms of tachycardia, palpitation, anorexia, excessive fatigue and nervousness. The metabolic rate gradually increased as the ingestion of thyroid extract was continued. After the experimental hypertthyroidism was well developed Lugol's solution was given, the thyroid extract being continued as before. In two cases the Lugol's solution and the thyroid extract were not kept up at a constant ratio; consequently the results are subject to criticism. In the other two cases Lugol's solution was continued over a period of six days, which is ample time for clinical improvement from iodine therapy. There was no improvement of any kind in either of these subjects.

The authors conclude that these experiments present further evidence against the conception that hypertthyroidism is due to a qualitatively perverted secretion of the thyroid gland and that the importance of iodine in these cases is in which the thyroid was not diseased points to the gland itself as the site of action of iodine in hypertthyroidism. The article is summarized as follows:

1. A state of artificial hypertthyroidism was produced in four adult males by the ingestion of thyroid extract.

2. Iodine had no effect upon this pathological condition.

3. The results suggest that the therapeutic effect of iodine in hypertthyroidism is produced by the action of the iodine on the thyroid epithelium.

J. EDWIN KIRKPATRICK, M.D.

McCullagh E. P. The Parathyroid Glands. Their Relationship to the Thyroid with Special Reference to Hypertthyroidism. *Arch Int M* 1925 xlii 546

McCullagh reviews the literature, embryology, gross microscopic and comparative anatomy, extrapation experiments (hypertrophy of one set of parathyroid glands after removal of another set, hypertrophy of the parathyroid gland after thyroidectomy, hypertrophy of the thyroid after parathyroidectomy), the effects of feeding thyroid extract on the function of the parathyroid glands, the effects of the administration of parathyroid extract on the function of the thyroid gland, the structure of the thyroid after the administration of parathyroid extract and of the parathyroid glands in hypertthyroidism, tetany and endemic goiter and the function of the parathyroid glands and a method of measuring it.

Six theories as to the cause of tetany are discussed and four series of experiments which were carried out to determine the blood calcium changes in hypothyroidism and hypertthyroidism are reported.

In the first group of experiments, 65 determinations of the serum calcium were made in 37 cases of hypertthyroidism in which bilateral ligation of the superior thyroid artery was performed. In the second group, 35 determinations of the serum calcium were made in 28 cases of hypertthyroidism in which lobectomy was performed. In the third group, 177 serum calcium determinations were made in 54 cases of thyroidectomy. In the fourth group, 139 serum calcium determinations were made in 139 cases in which the basal metabolic rate was determined coincidentally the blood for the test being taken in every case in the morning before the ingestion of food and within an hour after the metabolism test.

In the cases in which ligation of the superior thyroid arteries was done there was no definite decrease in the serum calcium. After lobectomy the serum calcium showed a decrease and after thyroidectomy a much more marked decrease. In 91 per cent of the 139 cases of hypothyroidism and hypertthyroidism the serum calcium was found to be normal and no relationship to the basal metabolic rate was observed.

In the results of these experiments there was nothing to indicate an abnormal functioning of the parathyroid glands in either hypothyroidism or hypertthyroidism except when there had been actual trauma or removal of these glands. The author has found no indication for the use of parathyroid hormone in hypertthyroidism. CARL R. STEINKE, M.D.

paralysis of the left side of the body. The patient quickly became semi comatose. His recovery was fairly rapid and after five weeks the only abnormal signs were slight residual motor and sensory impairment on the left side and a persisting field defect which had been a left lower quadrant hemianopsia. Five months later it was observed that these impairments had persisted and there was lateral nystagmus of both eyes. The diagnosis at that time was disseminated sclerosis. The third attack came on when the patient arose from bed after being ill with influenza for ten days. The signs were exactly the same as in the previous attacks but there was no loss of consciousness. Recovery was again rapid with the same residual impairments.

The fourth and final attack came on after a day's work. The patient became deeply unconscious. Complete paresis developed on the left side and there was a divergent strabismus but no sign of meningeal irritation was noted. The pupils did not react to light. The right pupil was widely dilated and the left of pin point size. Lumbar puncture showed increased pressure. The fluid was almost pure blood. Death occurred after about twenty hours.

At autopsy no signs of arteriosclerosis or cardiovascular disease were found. The hardened brain showed an aneurism of the right posterior cerebral artery measuring about  $\frac{3}{4}$  by  $\frac{3}{4}$  in. The course taken by the blood from the ruptured aneurism was followed through the right optic thalamus and the right lateral ventricle into the anterior horn of the left lateral ventricle.

The four groups of symptoms caused by leakage or rupture of a cerebral aneurism are: (1) those in elderly persons with arteriosclerosis (2) those simulating meningitis with loss of consciousness (3) those with no loss of consciousness but with typical signs of meningitis (4) those with signs of intracerebral hemorrhage without meningeal signs.

The author's case belongs in the last group. In a young subject with a negative Wassermann reaction and no arterial disease or infective endocarditis the probable cause of recurrent hemiplegias on the same side is the leakage of a congenital cerebral aneurism.

ALBERT S. CRAWFORD, M.D.

### SYMPATHETIC NERVES

Leriche R. and Fontaine R. An Experimental and Clinical Contribution to the Question of the Innervation of the Vessels. *Su. & Gynec. & Obs.* 1924 xlvii 637.

The authors investigated the effects of pain producing substances, local anesthesia, heat, cold, irritating solutions, and time in cases in which the innervation of arteries had been disturbed by periaxial sympathectomy, peripheral nerve section, excision of the sympathetic trunk or its ganglia, or partial or complete section of the spinal cord. In addition they studied the changes in the blood pressure and the hyperemia in affected areas. On the basis of the results of these investigations they sug-

gest that vascular reflexes may be divided into the following groups: (1) peripheral vascular reflexes having their centers in intramural plexuses; (2) vascular changes through axone reflexes; (3) intra-sympathetic reflexes which have their centers in the ganglia of the sympathetic trunk; (4) medullary vascular reflexes; and (5) cerebral vascular reflexes.

Upon this hypothesis they explain the phenomena following sympathectomy as follows:

After a periaxial sympathectomy the contraction of the arterial segment operated upon is the result of direct trauma to the intramural peripheral centers. The contraction lasts only a few hours and the vaso-dilation which follows it is produced by long reflexes. For this reason it may be bilateral and even produce modifications in the maximum and minimum pressure and the oscillatory index in all four extremities.

Periaxial sympathectomy changes the circulation in the extremity operated upon and produces an increase in the local heat. The local changes are less marked than those following sympathectomy because periaxial sympathectomy interrupts fewer pressor fibers. The hyperemia is less marked and less persistent than after the operation on the sympathetic trunk.

After operations on the sympathetic trunk the vascular changes are the same as those occurring after periaxial sympathectomy but as the arterial wall is not directly injured the initial contraction does not occur.

The authors draw the following conclusions:

1. The motor innervation of the vessels is due to peripheral nerve plexuses in the arterial wall itself.

2. The extrinsic nerves of the vessels play the rôle of association fibers with a pressor or depressor effect.

3. The simplest vascular reflex has the peripheral plexuses as a center. The reaction to heat and cold is a reflex of this kind.

4. More complicated and longer reflexes exist.

5. Every vasomotor reaction should be considered from the standpoint of its influence upon the general circulation and upon the local circulation of the limb subjected to operation.

The authors state that their theories of vasomotor activity are not contradicted by anatomical facts. They contend that even though vessels may be segmentally innervated periaxial sympathectomy may, through long reflexes, produce general changes in the circulation and lower arteriole capillary pressure by the suppression of pressor fibers thus producing an increase of local heat.

ERIC OLDBERG, M.D.

Fulton J. F. Vasomotor and Reflex Sequelae of Unilateral Cervical and Lumbar Ramisection in a Case of Raynaud's Disease with Observations on Tonus. *Ann. Su. & G.* 1928 lxxviii 827.

The case reported was that of a patient who originally entered the hospital afflicted unmistakably with Raynaud's disease in all four extremities. A radial periaxial sympathectomy was done first

# SURGERY OF THE NERVOUS SYSTEM

## BRAIN AND ITS COVERINGS CRANIAL NERVES

Armour D. Some Considerations on Head Injuries *Proc Roy Soc Med Lond* 1928 xxi 11

This article is limited to a consideration of head injuries without skull fracture.

Over a century ago Bell advocated more conservative treatment of brain injuries. Because of erroneous conceptions still being advanced by the text books many lose sight of the fact that the skull fracture is of much less importance than the type and degree of injury to the brain. Concussion as defined by Trotter is a transient state of instantaneous onset without evidence of structural cerebral injury. We now know that this cannot be true in all cases since the effects may last for long periods of time and there must be definite cerebral damage of varying degree. The theories differ as to the extent and type of the damage. Osati and Giliberti use the term traumatic encephalitis in place of postconcussion neurosis.

Headache one of the most common symptoms following concussion is probably due to a disturbance of the normal pressure relationships in the cerebrospinal fluid. Groups of cases of concussion without head wounds or skull fractures have been reported as showing in a large percentage an excess of albumin and increased sugar as well as changes in the tension of the spinal fluid. The factors of secretion, absorption and circulation as well as those which determine the volume of the cranial contents are responsible in one or another combination for the increase in fluid tension. A decrease in tension is not so easily explained.

Clinically there is a parallelism between blood pressure and spinal fluid pressure but the former is not a safe index of the latter except in the late stages or extreme conditions. The significance of the presence or absence of blood in the spinal fluid is often overstressed. The all important factor is the fluid pressure.

The pupils vary in size and reaction in light according to the degree of shock and the stages of the cerebral compression. Cranial nerves are injured in about 72 per cent of head injuries. Repeated observations should be made of the optic disks as the degree of papilloedema is often proportionate to the severity and duration of the intracranial compression. The earlier changes are venous engorgement followed by blurring of first the nasal and later the temporal margins.

Lumbar puncture should be employed more frequently as a therapeutic measure in both acute and chronic cases but its danger should be remembered and the fluid withdrawn slowly.

The use of hypertonics is another valuable means of reducing pressure non surgically. Glucose is the safest of the substances thus far tried out.

ALBERT S. CRAWFORD M.D.

Symonds C. P. The Differential Diagnosis and Treatment of Cerebral States Consequent upon Head Injuries *Brit M J* 1928 ii 829

This article deals chiefly with the differential diagnosis, treatment and prognosis of cerebral concussion and major and minor contusion, but touches briefly upon intracranial arterial hemorrhage and subdural hematomas.

Concussion is defined as that condition of subtotal cessation of cerebral function which immediately follows an injury to the head, lasts only a few moments and is succeeded by complete recovery within twenty-four hours.

Major contusion is defined as a condition following concussion in which the patient partially regains his senses but remains stuporous, restless and irritable for weeks and then shows gradual improvement.

Minor contusion is defined as the condition following concussion in which the patient complains for several weeks of headache, giddiness and mental disability.

Of seventy-one patients traced by the author at least a year after the accident which brought them under his care, twenty-eight (52 per cent) of the fifty-four who had suffered from a major contusion and five (29.5 per cent) of the seventeen who had suffered from a minor contusion were able to do full work, twenty-four (44 per cent) of the former and seven (41 per cent) of the latter were able to do light work and two (4 per cent) of the former and five (29.5 per cent) of the latter were totally incapacitated.

ERIC OLSEN M.D.

Graff E. L. A Case of Congenital Cerebral Aneurysm *Guys Hosp Rep Lond* 1928 lxxviii 493

Graff reports a case of fatal rupture of an aneurysm of the right posterior cerebral artery in a man twenty-five years of age. The aneurysm was undoubtedly of congenital origin. There had been three previous periods of leakage: the first at the age of ten years, the second at the age of nineteen years and the third one year prior to the final rupture.

Little could be learned regarding the details of the first leakage but it came on suddenly while the patient was bending over to lace his shoes, resulted in unconsciousness for twenty-four hours and confined the patient to bed for three weeks. The second accident occurred suddenly while the patient was at work. There was dizziness with a right temporal pain followed first by numbness and then by

paralysis of the left side of the body. The patient quickly became semi-comatose. His recovery was fairly rapid and after five weeks the only abnormal signs were slight residual motor and sensory impairment on the left side and a persisting field defect which had been a left lower quadrant hemianopsia. Five months later it was observed that these impairments had persisted and there was lateral nystagmus of both eyes. The diagnosis at that time was disseminated sclerosis. The third attack came on when the patient arose from bed after being ill with influenza for ten days. The signs were exactly the same as in the previous attacks but there was no loss of consciousness. Recovery was again rapid with the same residual impairments.

The fourth and final attack came on after a day's work. The patient became deeply unconscious. Complete paresis developed on the left side and there was a divergent strabismus but no sign of meningeal irritation was noted. The pupils did not react to light. The right pupil was widely dilated and the left of pin point size. Lumbar puncture showed increased pressure. The fluid was almost pure blood. Death occurred after about twenty hours.

At autopsy no signs of arteriosclerosis or cardiovascular disease were found. The hardened brain showed an aneurism of the right posterior cerebral artery measuring about  $\frac{3}{4}$  by  $\frac{1}{2}$  in. The course taken by the blood from the ruptured aneurism was followed through the right optic thalamus and the right lateral ventricle into the anterior horn of the left lateral ventricle.

The four groups of symptoms caused by leakage or rupture of a cerebral aneurism are: (1) those in elderly persons with arteriosclerosis; (2) those simulating meningitis with loss of consciousness; (3) those with no loss of consciousness but with typical signs of meningitis; (4) those with signs of intracerebral hemorrhage without meningeal sign.

The author's case belongs in the last group. In a young subject with a negative Wassermann reaction and no arterial disease or infective endocarditis the probable cause of recurrent hemiplegias on the same side is the leakage of a congenital cerebral aneurism.

ALBERT S. CRAWFORD, M.D.

### SYMPATHETIC NERVES

Leriche R and Fontaine R. An Experimental and Clinical Contribution to the Question of the Innervation of the Vessels. *Strg C3 cc & Obst* 1928 21 11 631.

The authors investigated the effects of pain producing substances, local anesthesia, heat, cold, irritating solutions, and time in cases in which the innervation of arteries had been disturbed by periaxial sympathectomy, peripheral nerve section, excision of the sympathetic trunk or its ganglia, or partial or complete section of the spinal cord. In addition they studied the changes in the blood pressure and the hyperemia in affected areas. On the basis of the results of these investigations they sug-

gest that vascular reflexes may be divided into the following groups: (1) peripheral vascular reflexes having their centers in intramural plexuses; (2) vascular changes through axone reflexes; (3) intra-sympathetic reflexes which have their centers in the ganglia of the sympathetic trunk; (4) medullary vascular reflexes; and (5) cerebral vascular reflexes.

Upon this hypothesis they explain the phenomena following sympathectomy as follows:

After a periaxial sympathectomy the contraction of the arterial segment operated upon is the result of direct trauma to the intramural peripheral centers. The contraction lasts only a few hours and the vaso-dilation which follows it is produced by long reflexes. For this reason it may be bilateral and even produce modifications in the maximum and minimum pressure and the oscillatory index in all four extremities.

Periaxial sympathectomy changes the circulation in the extremity operated upon and produces an increase in the local heat. The local changes are less marked than those following sympathectomy because periaxial sympathectomy interrupts fewer pressor fibers. The hyperemia is less marked and less persistent than after the operation on the sympathetic trunk.

After operations on the sympathetic trunk the vascular changes are the same as those occurring after periaxial sympathectomy but as the arterial wall is not directly injured the initial contraction does not occur.

The authors draw the following conclusions:

1. The motor innervation of the vessels is due to peripheral nerve plexuses in the arterial wall itself.

2. The intrinsic nerves of the vessels play the rôle of association fibers with a pressor or depressor effect.

3. The simplest vascular reflex has the peripheral plexuses as a center. The reaction to heat and cold is a reflex of this kind.

4. More complicated and longer reflexes exist.

5. Every vasomotor reaction should be considered from the standpoint of its influence upon the general circulation and upon the local circulation of the limb subjected to operation.

The authors state that their theories of vasomotor activity are not contradicted by anatomical facts. They contend that even though vessels may be segmentally innervated periaxial sympathectomy may through long reflexes produce general changes in the circulation and lower arteriole capillary pressure by the suppression of pressor fibers thus producing an increase of local heat.

ERIC OLDBERG, M.D.

Fulton J. F. Vasomotor and Reflex Sequelæ of Unilateral Cervical and Lumbar Ramiectomy. In a Case of Raynaud's Disease with Observations on Tonus. *Ann Surg* 1928 LXXXIII 817.

The case reported was that of a patient who originally entered the hospital afflicted unmistakably with Raynaud's disease in all four extremities. A radial periaxial sympathectomy was done first



and later a right ramiseotomy involving the fifth sixth seventh and eighth cervical the first thoracic and the second third and fourth lumbar rami. In addition the lower end of the sympathetic trunk was severed. The patient was followed for a year subsequent to the operation. The observations made in this case are summarized as follows:

1 Immediately after the second operation (the first was unsuccessful) all deep reflexes which pre-operatively had been equal were markedly depressed upon the side operated upon. In the right lower extremity the pulse became more full and the right foot became 3 degrees C warmer than the left foot. Horner's syndrome was noted on the right side.

2 One year after the operation the altered reflexes Horner's syndrome and the thermal differences were still persisting. There were no further symptoms of ischaemia in the right foot but the right hand was not appreciably benefited by the operation. In the right lower extremity a permanent and well marked diminution of resting tonus (as estimated by assuming that the knee jerk is an index of tonus in the quadriceps being a fractional manifestation of the stretch reflex which in the author's opinion is responsible for the maintenance of tonus) had existed since the operation.

The article contains tables of skin temperature observations made with the new and accurate Benedict thermocouple.

ERIC OLDREGE, M.D.

# SURGERY OF THE CHEST

## CHEST WALL AND BREAST

Kilgore A R. Chronic Cystic Mastitis—its Relation to Cancer of the Breast. *California & West Med.* 1928 LXIX 289

In the non productive non hyperplastic type of chronic mastitis the blue-domed cyst of Bloodgood is the end result. This is a simple serous non malignant fibrous walled cyst lined by epithelium.

In the productive or hyperplastic type of chronic mastitis the epithelial lining of the ducts is proliferated first into several layers or folds and finally into papillomata of macroscopic size composed almost entirely of epithelium.

Cancer arises from epithelium only. Few cancers springing from serous cysts of the breast have been reported. In the productive hyperplastic type of chronic mastitis the development of cancer is common.

In the non productive type of mastitis removal of the mass with a small amount of the surrounding tissue is sufficient. In the productive hyperplastic type the removal of all tissue involved is necessary.

PAUL W. SWEET M.D.

## TRACHEA LUNGS AND PLEURA

Ochsner A. Bronchography According to the Passive Technique. The Method of Choice for the Roentgenologist. *Ann Surg* 1930 91 412

Following the discovery of the X-rays many attempts at bronchography were made but before the introduction of iodized oil in 1922 they were seldom successful. Since 1922 bronchography has become a well established procedure.

Bronchography is indicated in all chronic pulmonary affections in which the diagnosis is not clear. It serves as a means of differentiating between bronchiectasis and lung abscess and between bronchiectasis and pulmonary tuberculosis in cases in which the tubercle bacilli have not been found. It will reveal tumors and strictures of the bronchi, the relationship of a foreign body in the parenchyma of the lung to the bronchi and the degree of collapse of the lung. A bronchographic examination should be made in all cases of cough persisting for more than four months.

The filling of the bronchial tree must be observed under the fluoroscope as the oil is quickly aspirated into the alveoli and the resulting haziness may obscure the dilated bronchus. Plates should be taken for confirmation and record. By turning the patient and viewing the chest from different angles errors of magnification may be avoided.

The method used by the author to introduce the iodized oil into the bronchi known as the passive

method. After the mouth has been cleansed with an antiseptic mouth wash the anterior tonsillar pillar is swabbed with a 10 per cent solution of cocaine from the uvula to the angle between the pillar and the tongue. When the swallowing reflex has been abolished as determined by immobility of the larynx on attempted deglutition the patient is given 3 or 4 ccm of a 3 per cent solution of novocain and instructed to tip the head backward protrude the tongue lean toward the affected side and breathe. The novocain is given to allay the cough reflex. The pillars are then again swabbed with cocaine as its effect is of short duration and the fluoroscopic examination is begun. The patient then takes 10 ccm of iodized oil into the mouth and aspirates it as before leaning toward the affected side. After expectoration of any saliva 10 ccm more are aspirated and a plate is taken. This procedure is not unpleasant to the patient.

GEORGE A. COLLETT M.D.

Stovall W D and Greeley H P. Bronchomycosis. *J Am Med Ass* 1928 XXI 1346

Stovall and Greeley report eighteen cases of primary infection of the lung by yeast like or other fungi. They were able in each case to isolate the invading organism. A review of the literature shows a paucity of such cases due no doubt to the fact that these organisms are not sought for in routine examinations of the sputum.

In twelve of the eighteen cases in which the fungus alone was considered responsible for the condition the organisms isolated produced lesions in animals.

The authors classify the organisms morphologically into two groups: (1) the yeast like forms, *Cryptococcus*, *Oidium*, *Monilia*, *Saccharomyces* and *Endomyces*; and (2) the filamentous or bacillary forms such as the *Actinomyces* group.

In the mild type of infection there are very few symptoms and improvement results after several months of mild illness. The severe type is not unlike tuberculosis but its symptoms are not so severe as the extent of the pathological changes would suggest. There is a moderately severe cough with scant expectoration of mucopurulent material which may be blood tinged. The leucocyte count is either normal or slightly elevated while the increase in temperature is only slight.

The authors believe that in the absence of any other etiological evidence a diagnosis of bronchomycosis is warranted when sputum examinations show the presence of yeast like or other fungi.

Of the eighteen patients seen in the last two years one is dead and the others are in various states of ill health. Some are improving while others

and later a right ramusectomy involving the fifth sixth seventh and eighth cervical the first thoracic and the second, third and fourth lumbar rami. In addition the lower end of the sympathetic trunk was severed. The patient was followed for a year subsequent to the operation. The observations made in this case are summarized as follows:

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The article contains tables of skin temperature observations made with the new and accurate Benedict thermocouple.

ERIC OLDBERG, M.D.

and that they occur most frequently in cases operated upon by surgeons whose technical care of the wound and hemostasis are faulty.

Abscess of the lung is but one of the many clinical forms of postoperative sequelæ which may have a common etiology.

Experimental attempts to cause the formation of an abscess of the lung by introducing bacteria and foreign bodies into the bronchi were uniformly unsuccessful, but when bacteria were brought to the lung in capsules or small segments of a vein in the form of an embolus abscess formation frequently resulted. Bacteria brought to the lung in the form of a free infected blood clot caused diffuse pneumonitis. In other experiments attempts were made to produce the clot in the dog's vein to determine the effects of coughing and to produce mixed infections by introducing mouth anaerobes, spirochetes and fusiform bacilli.

The investigations permitted the conclusion that lung abscess can be produced in dogs by the lodgment of an infected embolus, that diffuse pneumonitis rapidly of healing and even lung abscess is determined by the balance between the immunity of the host and the virulence of the organism and that perhaps in man the chronicity is due to second ary invasion by mouth bacteria.

The lesson is applicable to the larger field of all postoperative pulmonary complications. The evidence suggests that some if not most lesions of this type are the result of embolism due to surgical manipulations and that a gentle technique and perfect asepsis will do more to obviate them than improvement in anæsthetic apparatus.

WILLIAM E. SHACKLETON, M.D.

Hedblom, C. A., Joannides, M., and Rosenthal, S.  
Pulmonary Abscess—An Experimental Study.  
*Ann. Surg.* 1918 LXXXV 813.

Pulmonary abscess has been ascribed to the aspiration of infected material from the oral or naso-pharyngeal passages and to the entrance of infected emboli into the pulmonary tissue by way of the blood stream. The latter view has for its support the experimental work of Cutler who produced such abscesses by injecting infected emboli into the jugular vein. The former view has been supported by the discovery of aspirated material in the abscesses and by the findings of Lemon who noted aspiration of mucus and other substances during the course of general anesthesia. Lemon found also that lowering of the head below the level of the feet prevented aspiration in the animals used for his study.

In a bronchoscopic study of 100 patients under going tonsillectomy under light general anesthesia Myerson found that abolition of the cough reflex is of great importance in aspiration. Of 22 cases in which the cough reflex was not abolished blood or mucus was found below the larynx in only 4, whereas of 3 cases in which the cough reflex was abolished blood or mucus was found distal to the larynx in 2.

Corper found that in dogs and rabbits placed in a horizontal position aspiration of fluids introduced into the nose occurred readily only when anesthesia was induced.

Other factors of importance in the etiology of pulmonary abscess are the nature and virulence of the infecting organism. The organisms usually found in pulmonary abscesses are known under the general name of fusiform bacilli and include Vincent's spirochetes fusiform and pyogenic bacilli diphtheroids and the bacillus influenzae. By producing conditions similar to those of tonsillectomy the authors have been able to produce pulmonary abscesses with these organisms in 50 per cent of the dogs used in their experiments.

In the experimental work reported in this article 67 intrabronchial injections of infected materials were performed. Abscesses were produced in 20 animals (29.8 per cent). The authors' results and conclusions are summarized as follows:

Aspiratory abscesses can be produced in the dog if the cough reflex is controlled sufficiently long to allow the infected liquids to settle in the alveoli. The greatest number of abscesses (51 per cent) occurred in dogs which received fresh blood mixed with sputum that contained numerous fusiform bacilli mixed with pyogenic organisms. Pyogenic organisms mixed with blood did not cause abscesses. A lower percentage of abscesses was produced by the injection of gastric contents, pyorrhæa scrapings or combinations of these mixed with small pieces of tonsil and teeth. In one instance an abscess the size of a hen's egg was found seven days after the aspiration of sputum mixed with fresh blood. The fact that this abscess was not in communication with a bronchus seems to disprove the theory that in contradistinction to embolic pulmonary abscesses aspiratory abscesses are not walled off.

MANUEL E. LICHTENSTEIN, M.D.

## HEART AND PERICARDIUM

Kahn, M. H., and Barsky, J. Angina Pectoris. A Clinical Analysis of 200 Cases. *Ann. Int. Med.* 1913 II 431.

The authors present the findings of a study of 200 cases of angina pectoris under observation for a period of several years. They state that while the typical picture is easy to recognize borderline cases present a modified clinical picture that may cause confusion. 'Angina minor' is a term applied to a rather transient attack of anginal pain of moderate severity. In addition to these mild cases there are those with prodromal symptoms. Prodromal symptoms occurred in 83 of the 200 cases reported. These are cases which are easily overlooked until a typical attack occurs some time later. Most commonly the patient experiences a burning sensation or burning pain behind the sternum for a considerable time before an attack. Mild dyspnoea with palpitation is also frequent. Less often there is fatigue on exertion, loss of consciousness or paroxysmal tachy-

are not doing so well. Potassium iodide copper sulphate the X rays and thymol have been used with variable success.

MAURICE E. LICHTENSTEIN, M.D.

Archibald F. W. The Selection of Cases of Pulmonary Tuberculosis for Surgical Intervention. *New England J Med* 1928 cxxxv 1025

The first and largest group of cases of pulmonary tuberculosis suitable for operation are the chronic chiefly unilateral fibrotic and ulcerative cases uncomplicated by an active process in the other lung. Patients with this type of tuberculosis of the lung are adults with a long standing infection who show marked resistance. They are the good chronics who in spite of treatment never progress far enough to resume community life.

Of thirty one patients of this type whose cases are reviewed two died following operation. One died from typhoid fever seven weeks after the operation and after an excellent postoperative recovery. The other died from acute pneumonia in the other lung eight days after the operation which was done in one stage. Of the remaining patients twenty-one were operated upon more than eighteen months ago and of these half have been cured and the others show marked improvement.

The second large group of cases discussed by the author are the chronic cases in which treatment causes improvement for about a year but the lesions then spread the cavities increase and the fever recurs. For this group also operation is advised although the mortality is a little higher and the prognosis is less favorable than in the first group.

A third group of cases are those called the poor chronics which show a steady advance in the disease. In these also operation is advisable as in the majority it results in improvement. The primary mortality is high but without operation recovery never results.

Cases in which although the process may be unilateral cavitation and fibrosis are both excessive and the patient shows evidence of years of infection are terminal cases in which there is nothing to be done.

Other classifications and subgroupings may be made but in the main they are relatively few except in the large group in which artificial or acquired pneumothorax has been maintained for the early exudative forms. To the internist is left the task of deciding when pneumothorax should be allowed to lapse but the danger of rupture of the cavity into the artificial pneumothorax with resulting empyema must be constantly borne in mind. On the whole it is better to substitute a thoracoplasty for a pneumothorax because a thoracoplasty obliterates the pleural space.

WILLIAM F. SHACKLETON, M.D.

Thearle W. H. Surgical Operations in Pulmonary Tuberculosis. *California & West Med* 1928 xxxv 309

The surgical procedures recognized as valuable aids in pulmonary tuberculosis are phrenicectomy

pneumolysis artificial pneumothorax and extra pleural thoracoplasty. Phrenicectomy and pneumolysis are of value chiefly as supplementary measures to artificial pneumothorax and thoracoplasty. The author discusses the purpose of the various operations the selection of the cases the pre-operative and postoperative care and the results. Twelve cases of operation for pulmonary tuberculosis are reported.

Thearle agrees with Brown that if a patient with a large unilateral process shows no definite improvement after rest in bed for from two to three months the advisability of phrenicectomy pneumothorax or thoracoplasty should be considered and that in all cases in which cavities of any size are demonstrated by the X ray active surgical interference should be considered at once. (LAWRENCE C. ROBINSON, M.D.)

Garter B. N. Surgical Collapse of the Chest Wall as a Method of Treating Pulmonary Tuberculosis. *J Med Cincinnati* 1928 ix 431

Extrapleural thoracoplasty consists in the resection of portions of the first to the tenth or eleventh ribs inclusive from their articulations with the spine. The resection is done subperiosteally. In general from 12 to 15 cm. are removed from the fourth to tenth ribs inclusive from 6 to 8 cm. from the second and third ribs and 3 cm. from the first rib. The first rib should always be divided as the chest wall hangs upon it and complete collapse depends on its division. Partial excision of the eleventh rib allows the diaphragm to rise and partially paralyzes its effects of importance in lesions toward the base of the lung.

The operation should be performed under local or light nitrous oxide anesthesia or both.

Collapse of the chest places the lung at rest collapses the walls of cavities lessens the movement of the lymph thereby preventing transmission of the disease into new locations in the lungs and stimulates fibrous tissue formation in the compressed lung.

It is indicated for the chronic fibrotic type of pulmonary tuberculosis with or without cavity formation and for essentially unilateral pulmonary tuberculosis in a patient with good resistance in whom satisfactory artificial pneumothorax cannot be induced. (HOWARD A. MCKNIGHT, M.D.)

Cutler F. C. The Experimental Production of Postoperative Abscess of the Lung. *Edinburgh M J* 1928 cxxix 213

Many years of careful study of postoperative pulmonary complications has led to the belief that such complications are due largely to embolism from the wound rather than to inhalation and aspiration. This opinion is supported by Mikulicz who first pointed out that pulmonary complications follow operations under local anesthesia about as frequently as they follow operations under general inhalation anesthesia that they are more frequent in septic cases that their incidence has not been reduced by the great improvement that has been made in the

able to swallow solid food with ease. The patient with stricture of the esophagus should be treated for the rest of his life. When a sound the size of the little finger can be introduced with ease, the author teaches the patient how to introduce it himself and instructs him to use it at least once a week.

Of the 291 patients treated by the method described 12 (4.1 per cent) died—some from perforation and some from other complications.

Frequently in cases of stenosis foreign bodies become lodged in the strictured area. During a five year period 148 esophagoscopies for foreign bodies were done. In 44 of these cases the stricture was due to lye poisoning. In such cases it is a technical error to attempt to push the foreign body down with a sound. The foreign body should be removed with the esophagoscope.

VON LOBMAIER (Z)

Mollison W M. Dysphagia Due to Pharyngeal Paralysis. *J Laryngol & Otol* 1928 xliii 769.

Difficulty in swallowing due to paralysis of the pharyngeal wall is uncommon. It occurs in lesions of the medulla such as localized hemorrhage or embolism in bulbar paralysis in intracranial conditions such as tumors or pachymeningitis and in extracranial conditions such as foreign body injuries. Tumors lead poisoning and diphtheria.

The author reports three cases of pharyngeal paralysis following severe straining. In two cases vomiting and in one case, whooping cough preceded what is believed to have been a hemorrhage in the bulb involving the nucleus ambiguus. The three patients recovered except for difficulty in swallowing due to localized nuclear damage.

One case is reported in which evidence of embolism was present. The pharyngeal paralysis developed presumably from embolic blocking of a vessel to the nucleus ambiguus. The patient died.

Two cases in which polio encephalitis preceded the paralysis are reported. The prognosis was regarded as good in one and recovery was complete in the other.

One patient had a gunshot wound at the base of the skull with damage to the ninth tenth and eleventh nerves as they emerge from the jugular foramen. Dysphagia was permanent. In another case a tuberculous gland was thought to impinge upon the same nerves giving rise to dysphagia.

MANUEL L. LICHTENSTEIN, M.D.

Bloom C J. An Intensive Study of the Thymus. *South M J* 1928 xvi 905.

Bloom discusses the common symptoms, the methods of diagnosis and the treatment of thymic disease on the basis of 127 cases. He states that the diagnosis is now made at an earlier age than it was made formerly.

In the cases reviewed, the ratio of males to females was 11:9. Many of the patients were Jews and Italians. It was found that the body weight and the shape of the body are of no significance as regards thymic disturbances.

The major signs of thymic disease are nervousness, inability of the infant to cry, restlessness, cyanosis, dyspnea, stridor, extreme pallor, attacks of weakness and accelerated breathing. Minor indications are a poor appetite, refusal to eat solid foods, lymphatic involvement, flabbiness of the tissues, a cough, eczema, asthma, vomiting and a familial history of endocrine disturbances.

In the cases reviewed the diagnosis was based primarily on the objective signs. In 4 cases in which a positive diagnosis was made and in 5 cases in which a probable diagnosis was made before roentgen examination, the X-ray findings were negative. In all of the others the diagnosis was confirmed by the roentgenologist.

There were only 2 deaths, neither of which could be attributed to the thymic disease alone. One was due to a ruptured spina bifida and the other to bronchopneumonia.

In conclusion Bloom states that the only treatment for thymic disease is X-ray irradiation.

WILLIAM F. SHACKLETON, M.D.

cardia. Tender spots on the chest wall over the sternum and pectoral regions were present in 65 of the 200 cases.

Twenty two per cent of the patients had their initial attack before the age of forty years while almost 40 per cent had their first attack between the ages of forty and fifty years. The ratio of males to females was 3:1. Seventy nine of the 200 patients gave a history of recurring tonsillitis and 11 a history of acute articular rheumatism. Rheumatism is to be considered as a possible cause of the condition. Only 8 patients gave a positive history or blood test for syphilis. Twenty three were diabetics. The importance of tobacco and alcohol in the causation of angina pectoris is disputed. That arteriosclerosis is the outstanding condition is indicated by the tortuous peripheral and retinal vessels, arcus senilis and arteriosclerotic renal changes. In the cases reviewed the arterial blood pressure did not appear to be an etiological factor. The largest percentage of the patients who died had normal systolic diastolic and pulse pressures. In 62 cases the first cardiac attack indicated a poor muscular quality and in 57 cases a rough systolic murmur was heard. In only 6 cases was the disease associated with rheumatic mitral stenosis.

Of importance in the prognosis are the associated clinical symptoms of cardiac asthma, pulsus alternans, a systolic gallop rhythm and the occurrence of cyanosis on exertion or with an attack. The concurrence of gall bladder disease and coronary disease has been noted by many. Willins reported the presence of gall bladder disease in 26 per cent of proved coronary cases. The differentiation of the two conditions is of utmost importance.

There were 30 deaths in the cases reviewed. Patients whose first anginal attack occurred before the age of forty years survived for from six to nine years. When the first attack occurred after the age of fifty years the period of survival was considerably shorter and when the first attack occurred after the age of sixty years the period of survival was less than six months.

The treatment is palliative. In cases with spasm of the coronary vessels diathermy has been of some benefit. Sympathectomy has relieved the pain of an attack and thereby eliminated vagal inhibitory stimuli.

On the basis of this series of cases the authors suggest the following classification:

1. Angina pectoris due to aortic disease (a) prodromal (b) with hypertension (c) with aortic atheroma (d) with aortic regurgitation (e) with aneurism of the aorta (f) with aortic stenosis (g) with other pathological lesions.

2. Angina pectoris with coronary disease (a) with coronary arterial spasm (b) with left coronary involvement (c) with right coronary involvement (d) with coronary capillary involvement.

3. Angina pectoris with rheumatic disease (a) with rheumatic myocarditis (b) with mitral stenosis.

MICHAEL E. LICHTENSTEIN, M.D.

## ESOPHAGUS AND MEDIASTINUM

Camplán A. Strictures of the Esophagus from Lye Poisoning. (Ueber die Speiseröhrenverengerungen durch Laugenvergiftung). *Orion Heft* 19, 3. 1920. 385.

Lye poisoning due to attempts at suicide is usually very severe because as a rule a large quantity of a concentrated solution has been ingested. Accordingly, such cases present extensive changes which do not respond to treatment in the same way as lye poisoning in children or accidental lye poisoning.

The lye exerts its strongest action in the physiologically narrow parts of the tube where the esophagus crosses the aorta and in the region of the cardia. Concentrated solutions cause disturbances in the submucosa and in the muscle layer which lead to necrosis. At these sites cicatrices and shrinkage occur and form strictures. The scars which cause strictures extend through the entire thickness of the esophageal wall.

Recently Salzer attempted to prevent the development of stricture and in children he obtained good results. In the Rhinological and Laryngological Clinic in Budapest his procedure was used in 10 cases of attempted suicide in adults. Four patients (40 per cent) died from perforations caused by the dilatation treatment. The cause of this high mortality was not an error in the technique but the severity of the lesions: the esophagus became fragile and easily torn as was demonstrated at autopsy when it crumbled between the fingers.

As Lotheissen and Jasselsberg have noted the occurrence of spontaneous perforation it can be readily understood that in severe cases even the most careful and skillful dilatation can cause perforation. The esophageal wall undergoes such marked anatomical changes that the introduction of even the softest catheter is dangerous.

The author was unable to prevent scar formation and stenoses even in cases in which the dilatation was well borne. In the two or three weeks of treatment it was necessary to use progressively thinner sounds. In 1 case the stenosis rendered gastrostomy necessary.

As Salzer treatment does not prevent the formation of stricture and is associated with the danger of perforation the author regards it as inadequate.

Besides the 27 cases already mentioned the author treated 291 other cases of lye poisoning in a period of three years. The treatment was begun from two to three weeks after the poisoning and the stricture was dilated gradually. Often the author makes an esophagoscopic examination as this will reveal the character of the scar and stricture and its site in the lumen. Frequently it is impossible to introduce a sound even when the patient is able to swallow. Esophagoscopic examination will then show that the opening is eccentric. In such cases the author dilates with the aid of the esophagoscope. In the beginning the treatment is given daily but later it is given only every two days as long as the patient is

hernia. His investigations revealed the occurrence of 3 types of trunk: (1) the masculine type (broad chest and narrow pelvis) which was found in a fully developed form in only one half of the men (2) the feminine type (narrow chest and wide pelvis) and (3) the transition type (cylindrical shape). In the 70 cases of inguinal hernia examined the masculine type of trunk was found in 24 per cent and the feminine type in 76 per cent. Men with a trunk of the feminine or transition type are predisposed to hernia. In men with the male type of trunk recurrence after operation for inguinal hernia is rare whereas in men with the feminine type of trunk recurrence is not infrequent even after light work and occurs early.

OPPEL (Leningrad) stated that on the basis of 2000 hernia he prefers the Roux operation. Relapse occurred in from 4 to 15 per cent. There is less danger from suppuration after the Roux operation than after the other methods. Abdominal muscle exercises are unnecessary.

STEPANJANC reported that he had operated on 708 patients with inguinal hernia and on 22 with femoral hernia by Bassini's method. Recurrence developed in 43 (6 per cent) and strangulation in 26. Three patients died 2 from strangulated hernia. Stepanjanc uses silk sutures. In 10 cases of inguinal hernia and 1 case of recurring femoral hernia the ureter was situated in front of the hernial sac.

DIVAYIN reported that of 477 operations performed by him for inguinal hernia 13 (2.7 per cent) were followed by recurrence. In 6 cases the cause of the recurrence was starvation (recurrence after ten years) in 3 early return to hard work and in 4 anatomical weakness of muscle or aponeurosis.

KRYMOV (Kijew) emphasized the importance of bringing out the stump of the hernial sac. He is opposed to displacement of the spermatic cord in operations for oblique inguinal hernia and recommends his modification of Girard's method for large oblique inguinal hernia. He stated that after the operation the patient should remain in bed for two weeks and should not return to work before one month. In the so-called temporary hernia the sac is always empty.

MARTYNOV (Moscow) stated that he does not approve of the Wenglovsky method. Since in the cases in which he used catgut the incidence of recurrence was 10 per cent he now sutures with silk.

MILLET allows the patient to flex his knees immediately after the operation and to turn on his side after a short time. Elderly persons especially he allows to sit up on the third or fourth day and to walk on the fifth or sixth day. Recurrences appearing seven, eleven or twenty years after the operation he believes are not recurrences but new hernia.

SCHWARZ recommended Andrew's method on the basis of 96 operations.

SAPKAJC (Leningrad) reported on 100 inguinal and 9 umbilical hernia in children ranging from one month to fourteen years of age. Girard's method

was used in most of the cases with entire success. In 81 cases general anesthesia and in 38 cases local anesthesia was employed. Four hernia were strangulated. There were 2 deaths a mortality of 1.6 per cent. The most favorable age for the operation is between the third and fifth years. In the cases of infants under one year of age operation for hernia is allowable only when there is a tendency toward strangulation.

GORELIK stated that he approves Bassini's operation. He reviewed 482 cases of inguinal hernia in 446 (92.5 per cent) of which this operation was done. Suppuration occurred in from 1 to 1.5 per cent. In Gorelik's opinion there is no relationship between the shape of the trunk and the occurrence of hernia.

LACCHIANI (Tiflis) reviewed 625 operations for hernia most of which were performed according to the Bassini method with the use of silk sutures. Suppuration occurred in 3 per cent. Local anesthesia was employed in 80 per cent. Recurrence developed in about 5 per cent of the cases. The causes of recurrence were technical errors, suppuration, hematoma, pulmonary complications, a poor state of nutrition, a weak constitution, weakness of the abdominal walls, multiple hernia, atrophy of the abdominal wall from the wearing of a truss, early getting up and early hard work.

KULANOV reported on 636 operations for inguinal hernia and 44 operations for femoral hernia. He prefers the Girard and the Roux-Herzen methods.

WREDEV stated that in his opinion Bassini's method is indicated for indirect inguinal hernia but is not suitable for direct hernia. For the latter plastic operations must be done.

GRINSTEIN reported that in 18,000 miners who were free from hernia at the time they were hired only 100 hernia developed in the course of one year in spite of hard work and unfavorable conditions. All of the hernia were operated upon by the Kocher method. The patients left their beds on the second or third day after the operation were discharged on the ninth or tenth day and returned to work at the end of thirty days. A recurrence developed in 5 (5 per cent). Grinstein stated that the chief factor in the development of hernia is a preformed hernial sac.

SCHACK (Leningrad) reviewed 86 operations for femoral hernia 46 of which were done according to the Reich method. He is in favor of the inguinal method of operating on femoral hernia. For inguinal hernia he uses chiefly Girard's method.

PAVLENKO (Leningrad) stated that good results were obtained in 29 cases of femoral hernia by Wreden's musculo-aponeurotomy with Sevkenenko's modification. From the external margin of Poupart's ligament was cut a strip which drawn through the pectineus muscle strengthened it and was sutured with it to its former site on Poupart's ligament.

NEDOCHILEV stated that occupation has an influence on the incidence of hernia and that long



# SURGERY OF THE ABDOMEN

## ABDOMINAL WALL AND PERITONEUM

Sozon Jarošević Bobrov Steblin Kaminsky and Others Discussion on Radical Operations for Inguinal and Femoral Hernia and Their End Results (Aussprache ueber die Radikaloperationen der Leisten und Schenkelbrueche und ihre Dauer resultate) Verhandl d 18 Russ Chir Kong Moscow 1927 p 51

Forty five speakers took part in this discussion. SOZON JAROŠEVIC (Leningrad) reviewed 1780 operations for inguinal hernia. One hundred (5.6 per cent) were followed by recurrence. In 37 per cent of the latter the cause of the recurrence was suppuration in 6 per cent a hematoma in 5 per cent a technical error in 2 per cent too early getting up (on the seventh day) and hard straining and in 50 per cent an undetermined factor. The undetermined factor in the last group was related to the patient's constitution. This was evidenced by the facts that in this group the same type of hernia recurred repeatedly (as many as 4 times) that the former anatomical relations were re established and that direct herniae recurred 8 times more frequently than they developed while indirect herniae recurred only one third as many times as they developed. In direct hernia it is chiefly the posterior wall of the hernial canal that is insufficient whereas in indirect hernia it is chiefly the anterior wall that is insufficient. Hence in operating on indirect hernia particular attention must be paid to strengthening the anterior canal wall whereas in operating on direct hernia plastic reinforcement of the posterior wall is the main object. In Federov's clinic the Roux method is used for indirect hernia in the initial stages. In all other cases excision of the hernial sac is done as high up as possible. For pronounced indirect and congenital hernia the methods of Bobrov Girard and Bassini are considered good. For direct hernia plastic methods are preferred. The patient is kept in bed for two weeks and is forbidden to work for six weeks.

BOUROV (Veronezh) reported on 1080 operations for inguinal hernia performed on 794 patients. One thousand and twenty of the operations were done by Oppel's modification of the Roux method. These were followed by recurrence less frequently than other procedures. In 13.3 per cent of the cases with recurrence there were repeated relapses. Recurrence was most frequent in cases of direct hernia. In 95.95 per cent of the cases healing occurred by first intention in 9 cases (0.83 per cent) there was primary suppuration and in 35 cases (3.22 per cent) the ligation sutures gave way. For deep sutures Bobrov recommends non absorbable material.

STEBLIN KAMINSKY (Moscow) reported on 870 operations for inguinal hernia performed on 755

patients. Bobrov's method being used in the majority and on 60 operations for femoral hernia chiefly by Prokunin's pectineus musculoplasty.

SUBIR reported on 491 operations for hernia 80 per cent performed by the Girard Bobrov method 10 per cent by the Bassini method and 10 per cent by the Kocher method. The mortality was 1 per cent. The permanent results were determined for 140 cases. In 0 per cent there was pain in the operative wound on exertion. In 7 per cent, the ligatures gave way and there was a long-continuing fistula. In 8 per cent a recurrence developed. In 1 case 4 operations were performed.

USREVSKY (Tver) recommended the Roux operation with which several thousand inguinal herniae have been repaired. Strangulated hernia he treats according to the Girard method. Suppuration occurred in from 3 to 6 per cent of his cases. The incidence of recurrence after the Roux operation was 10.9 per cent. Recurrence was most frequent in elderly patients. In patients between the twentieth and fortieth years of age the incidence of recurrence was 6.5 per cent and in those between the fortieth and seventieth years of age 14.3 per cent. Nevertheless the Roux method is superior to the Bassini method as the Roux operation in itself is a cholecyst and in case of suppuration or recurrence does not render a second operation difficult.

VOLOKOV (Jadrny) reported on 415 operations for inguinal hernia performed on 360 patients 95 per cent of whom were males. Only 8 per cent of the hernia were congenital. Ninety per cent were operated on by the Roux method 4 per cent by the Mayo method 3 per cent by the Bassini method and 3 per cent by the Bobrov method. Healing occurred by first intention in 82 per cent with hematoma formation in 4 per cent and with suppuration and loosening of 1 or 2 sutures in 14 per cent. There were only 3 deaths from strangulated hernia. Recurrence developed in 5 per cent of the cases in which the Roux operation was done. Volkov recommends this operation highly. He uses the finest possible silk. The patient is allowed to lie on his side immediately after the operation.

BRATJCEV (Moscow) regards the simplest method as the best and is opposed to plastic procedures. He has operated upon 18 recurrent inguinal hernia. He believes the causes of recurrence to be muscle weakness which favors cutting through of the sutures, the use of catgut insufficiently high dissection of the hernial sac suppuration and getting the patient up too early.

MOSEKALEV (Dnepropetrovsk) reported that in examinations of 873 men engaged in heavy work in two factories he found 35 inguinal hernia. In addition he examined 35 other persons with inguinal

7 Spasokukocky operation This is a modification of Girard's method. A large incision is made in the aponeurosis of the externus and of the thin cremaster layer (tunica cremasterica) is slit and the fascia infundibuliformis or fascia transversa is slit longitudinally for a distance of 5 or 6 cm in the region of the neck of the hernial sac. The transverse fascia is stripped from the sac on all sides with a blunt instrument. The freed spermatic cord and the testicle are then held firmly with the right hand the neck of the sac is fixed with a toothed forceps held in the left hand and with one jerk the sharper the jerk the less the damage the distal portion of the sac is torn out. Hemorrhage is absent or minimal. The operation may be completed by any method preferred (Spasokukocky. See Zentralorg f d gesam Med u Chir xxix 726).

8 Pravin operation This is an atypical Bassini operation without displacement of the spermatic cord (N. Mikuli B Linberg. See Zentralorg f d gesam Med u Chir xxxix 737).

9 Matrosovitch operation This is a suture modification of the Roux method (see discussion).

10 Toprover operation This is a modification of the methods of Bobrov and Girard (see Zentralorg f d gesam Med u Chir xxxix 624).

#### RADICAL OPERATIONS FOR FEMORAL HERNIA

1 Prokunin operation This is a plastic operation with flaps from the pectineus muscle and from the fascia (Prokunin Inaug Diss Moscow 1900 Chirurgia 1903 September).

2 Abrazanov operation (1900) A transverse skin incision is made above and parallel with Poupart's ligament and the hernial sac is ligated as high up as possible the ligature threads being left long. Each ligature is then threaded onto a sharply curved needle. The needles are passed through the abdominal wall muscles from within outward from 1½ to 2 cm above Poupart's ligament and through Cooper's ligament both threads are drawn tight and tied and the skin is then sutured (Abrazanov Russkij Vrac 1909 No 27).

3 Wreden operation (1922) Muscle closure is effected with the use of the pectineus muscle (See Zentralorg f d gesam Med u Chir cix 420 xiv 365).

4 Herzen operation (1924) This is a plastic repair with periosteal flaps (see Zentralorg f d gesam Med u Chir xxi 932).

5 Jevkunenko operation This is a modification of Wreden's operation (see discussion).

6 Mikuli operation (1925) This is a modification of Wreden's operation without division of Poupart's ligament. A longitudinal incision is made following removal of the hernial sac and the toilet of the fossa ovalis and of the pectineus muscle a strip from 0.5 to 0.75 cm wide and from 8 to 10 cm long is dissected from the aponeurosis of the externus medial to the inner column and left attached to the os pubis. The defect in the externus aponeurosis is sutured. By means of a curved dressing

forceps forced through the pectineus muscle from without inward the free end of the strip of aponeurosis is drawn through the muscle. In a similar manner Poupart's ligament is pierced by a blunt instrument medial to the vessels and the strip of aponeurosis is drawn through Poupart's ligament a maneuver by which the pectineus is drawn taut and elevated. The free end of the strip is placed transversely on the externus aponeurosis and attached with a few sutures (See Zentralorg f d gesam Med u Chir xxxix 737) KORNMAN (Z).

Lyle H H M Fascial Sutures for Inguinal Hernia Ann Surg 1928 lxxviii 870

Lyle reports his clinical results from the use of autoplasmic fascial sutures in the treatment of inguinal hernia in the male according to the Gallie and the McArthur methods. In the first cases in which McArthur autoplasmic pedicled fascial flaps were used the technique was that laid down by McArthur. In the others Lyle employed the mesial fascial strip to unite the conjoined tendon to Poupart's ligament proceeding on the assumption that fascia unites to fascia more readily than to muscle and used chromic gut for this union.

Two types of operations were performed—the standard Bassini repair and the Halstead modification. The Halstead modification violates the essential physiological principle of muscular shutter closure. The rectus transplant and its variants are physiologically and anatomically unsound.

In all operations excision and high ligation of the sac were done and the sac was fixed well above and out of line with the internal abdominal ring. High closure of the internal ring was effected about the cord the transversalis fascia being sutured well up behind the cord. In suturing the conjoined tendon to Poupart's ligament Lyle passed the continuous fascial suture in such a manner that the conjoined tendon was shortened and its insertion into the pubic spine was strengthened. Immediately after the completion of the stage of dissection the patient was placed in the position of physiological relaxation. To obtain this position the thigh was flexed on the abdomen and the leg on the side operated upon was crossed over the other one.

In order to insure permanent union between the structures to be united it is essential to remove not only the loose gliding areolar tissue from the fascial strips but also to clear Poupart's ligament.

The needle should be large enough to allow the fascia to be pulled through without dragging.

After convalescence massage and systematic exercises are indicated to strengthen the abdominal muscles.

The fascial suture has been employed in 335 hernia. Of the 8 recurrences 7 followed the Halstead modification of the Bassini operation and 1 followed the Bassini operation. Five of the recurrences occurred in cases of direct hernia. There were no recurrences after the Callie operation.

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continued standing in particular is an important factor. Hernia was found in 12 (8 per cent) of 141 locksmiths, 12 (10 per cent) of 121 workers in iron foundries, 5 (10 per cent) of 50 tailors, 9 (8 per cent) of 95 hammersmiths, 14 (19 per cent) of 77 blacksmiths, 13 (28 per cent) of 47 coppersmiths, 50 (31 per cent) of 163 housepainters, and 46 (33 per cent) of 140 motor car drivers. Nedochlebov operates according to the Andrews method.

MANUJLOV (Leningrad) reported on 4,018 inguinal hernie and 91 femoral hernia. 87.7 per cent of which were operated upon. General anesthesia was used in 10.8 per cent of the cases, local anesthesia in 83.2 per cent, and spinal anesthesia in 1 per cent. Three thousand and thirty-six operations were done by the Bassini method, 22 by the Kocher method, 135 by the Bobrov method, 69 by the Girard method, 23 by the Roux method, and 241 by other methods. There were 75 deaths, a mortality of 1.2 per cent. Suppuration occurred in 212 cases (5.6 per cent).

GOLJACHY (Moscow) said that in cases of congenital hernia and in hernia that develops quickly after trauma all of the operative methods give good results, but in cases of occupational hernia to which almost all hernie of the linea alba belong, the usual methods such as the Roux and the Bassini procedures are inadequate. For the latter the Spasokukolocky method may be recommended. In cases of hernia ascribable to pathological changes in the tissues, plastic operations with transplantation of fascia etc. come into consideration.

MATROSOV reported that he operated with his own modification of the Roux procedure in 500 of his approximately 700 cases of hernia. His modification consists in the use of single sutures instead of mattress sutures. On later examination in 100 of his cases, he found suppuration in 5 per cent and recurrence in 3 per cent.

VARILKOV spoke against standardization and for individualization in hernia operations. He stated that as the elasticity of the tissues used is of chief importance, Bassini's principle is correct.

MESTCHNIKOV reviewed about 600 herniotomies. He believes that recurrences occur more frequently than is generally assumed. He operates according to the Bassini-Postempsky method with subcutaneous displacement of the spermatic cord. Silk sutures are used.

HAGEN TORV reviewed 4,000 herniotomies. Having tried out all of the methods of operating, he has returned to Bassini's operation. He believes that long and narrow hernial sacs should be removed. He prefers paravertebral anesthesia and has entirely abandoned general anesthesia. He disapproves of all plastic operations on muscle and bone.

TIMOFFEV reviewed 1,000 cases of inguinal hernia. A recurrence developed in 3 (0.3 per cent). In the cases of children with a narrow hernial sac, he resects the sac and does nothing further in a plastic way. If the transverse fascia is stretched, he uses pursestring sutures for the hernial protrusion and Bassini sutures with inclusion of the lateral border

of the rectus. When the inguinal triangle has been of irregular shape, Bassini's operation has given him the best results.

Briefly summarized the operative methods and modifications by Russian surgeons of the radical operation for inguinal and femoral hernia mentioned in the addresses and the discussions at the Eighteenth Russian Surgical Congress, Moscow, 1926, were the following:

#### RADICAL OPERATIONS FOR INGUINAL HERNIA

1. Bobrov operation (1892). This is identical with the Lucas-Championniere method. The aponeurosis of the externus is slit and the hernial sac excised. The fatty tissue in the region of the canal is carefully removed. Silk button sutures are placed in the margins of the inguinal canal en masse—on the one side, the aponeurosis of the externus, the muscles and the transverse fascia; on the other side, Poupart's ligament and the aponeurosis of the externus. The lowest suture is placed either above or below the spermatic cord. (A. Bobrov, First Russian Surgical Congress, 1900. *Krymov's D. Lehre von den Hernien*, Russische Chirurgie, 1911, xxviii).

2. Razumovsky operation (1897). Removable metal sutures are used for (1) displacement of the hernial sac and (2) suture of the canal. The spermatic cord is not displaced. There are 2 modifications of the operation. The method of suture can not be described in condensed form. (A. Krymov, *ibid.* J. Tichov, *Spez. Chir.* 1917, 10).

3. Wenglovsky operation (1901). The neck of the hernial sac is ligated, but the sac is not removed. The attachment of the internal oblique and transverse muscles is divided at the linea alba by vertical incision of the sheath of the anterior rectus, and the mobilized lower border of the joined internal oblique and transverse muscles is sutured to Poupart's ligament. (Wenglovsky, *Operative Chirurgie*, 1915).

4. Krymov operation (1903). The central portion of the hernial sac is displaced according to the Kocher method and anchored. The peripheral portion is opened inverted and in suturing is interposed as a fold of peritoneum between the muscles and Poupart's ligament. There is no displacement of the spermatic cord. Suture of the aponeurosis is done according to the Girard technique. (Krymov, *ibid.*).

5. Oppel operation (1911). This is a modification of the Roux method. In the button suture of the fold of the externus aponeurosis, the muscle on the inner side and Poupart's ligament on the outer side are included. (V. Oppel, *Nachricht. Mediz. 1919*, Nos. 4 & 5. *K. V. I. J. Med. Soc. Zentralorg.* f. d. ges. Med. u. Chir. xxix, 37, 108. M. Bobrov, discussion).

6. Wreien operation (1914). This is a direct plastic restoration of the posterior wall of the canal by a flap of aponeurosis from the sheath of the rectus abdominis muscle. (See *Zentralorg.* f. d. ges. Med. u. Chir. xxx, 931).

of the neoplasm was very difficult on account of adhesions which had developed. Uneventful recovery resulted.

The cyst was lined by a tissue showing all of the characteristics of intestinal mucous membrane and appeared to be an intestinal malformation. The fluid was free from cells and was therefore not purulent. It contained only fine transparent droplets probably fat. Cultures were sterile.

Up to 1924 only 150 cases of cyst of the mesentery had been reported. The most probable theory in regard to their origin is that they are congenital resulting from an intestinal diverticulum or the inclusion in the mesentery of displaced tissue from the genito-urinary tract. The cyst in the authors' case was evidently of intestinal origin but contained a chylous fluid and had developed at a distance from the intestine.

Cysts of the mesentery are generally very difficult to remove. They develop between very vascular folds of peritoneum; their walls are abundantly supplied with blood vessels and their posterior pole lies close to the inferior vena cava and the ureter. Though there is normally a plane of cleavage between the wall of the cyst and the peripheral vessels, this plane may be obliterated by the growth of the tumor or by inflammation. The mesenteric vessels at the periphery sometimes become so greatly dilated that extirpation is impossible. The symptoms are so slight that the tumor is generally not diagnosed until it becomes large enough to be noticeable; until inflammation occurs or until signs of intestinal occlusion appear. The cyst in the authors' case had developed between folds representing the primitive mesocolon and the posterior parietal peritoneum but such intimate adhesions had formed between its parietal covering and the right fold of the root of the mesentery that it appeared to be included in the latter and ligation of branches of the mesenteric artery was necessary for its removal.

The high mortality of extirpation of cysts of the mesentery (25 to 40 per cent) has led some surgeons to advise marsupialization but in the authors' opinion marsupialization should not be resorted to unless extirpation is impossible.

AUDREY G. MORGAN, M.D.

#### GASTRO-INTESTINAL TRACT

Rigler, L. G. Roentgen Observation of a Benign Tumor of the Stomach Prolapsing through the Pylorus. *Am J Roentgenol* 1923 22 529.

Rigler reports a case of benign polyp of the stomach in which it was possible to observe roentgenoscopically and record roentgenographically the prolapse of the growth through the pylorus into the duodenal bulb. The tumor was first manifested by a rounded central filling defect near the pylorus which was brought out by pressure. This defect could be displaced toward the pylorus by manipulation and subsequently was noted in the duodenal bulb.

AUDREY G. MORGAN, M.D.

Singer, H. A. and Dyas, F. G. Syphilis of the Stomach with Special Reference to Certain Diagnostic Criteria. *Arch Int Med* 1928 xlv 718.

In a case in which the distal one third of the stomach was resected for a lesion believed to be a carcinoma, the gross and microscopic appearances of the specimen when considered with the clinical history suggested that the changes were syphilitic but in sections examined later it was impossible to find the spirochæta pallida or the classical gumma and two experienced pathologists consulted did not consider the evidence sufficient to justify the anatomical diagnosis of syphilitic gastritis.

This case and three subsequent cases of similar nature led the authors to inquire into the frequency with which the spirochæta or gummata were found in cases of gastric syphilis reported in the literature. Only one report that of McNee stated that an organism appearing to be the spirochæta pallida was present but in Singer's opinion the organism described and pictured was probably the spirochæta of Vincent. If this assumption is correct it is apparent that in no case reported in the literature of gastric syphilis of the acquired type has the spirochæta pallida been found.

JOHN W. NUTZ, M.D.

Broster, L. R. Gastric and Duodenal Ulcer. *Brit M J* 1928 ii 786.

Broster reviews 207 cases of gastric and duodenal ulcer which were treated surgically. Eighty-two per cent of the patients with duodenal ulcer, 91 per cent of those with pyloric ulcer, and 75 per cent of those with gastric ulcer were males.

The diagnosis of ulcer was based upon pain, vomiting and hæmorrhage. Pain was present in 99 per cent of the cases. As a rule the pain bears a definite relationship to food. It is seldom noted before half an hour after the ingestion of food but thereafter may occur at any time during the interval before the next meal. As a rule the more distal the ulcer from the cardia the later the pain. In the cases of duodenal ulcer reviewed it occurred from two to three hours after the ingestion of food whereas in the cases of gastric ulcer it occurred after from one to two hours and in the cases of pyloric ulcer after from one to three hours. In only a small percentage of the cases was it unrelated to food and in a smaller percentage it occurred within half an hour after the ingestion of food. In the majority of cases of duodenal ulcer the pain is relieved by food but in cases of gastric and pyloric ulcer it is most relieved by vomiting.

Vomiting is of importance because of its association with pain. It usually occurs when the pain is most severe. Vomiting was a symptom in 30 per cent of the cases of duodenal ulcer reviewed, 88 per cent of those of gastric ulcer and 70 per cent of those of pyloric ulcer. In conditions such as pyloric stenosis and hourglass stomach its time of onset, amount and character are of diagnostic significance.

Andrews E. Further Experiences with Purely Fascial Herniotomy. *Ann Surg* 1928 LXXXVI 874

Andrews describes a technique for closing inguinal hernia with the use of only white fascia. He states that no one type of operation can be applied to all cases. As every hernia is a distinct problem the surgeon should open the inguinal canal prepared to undertake the plastic procedure which will best meet the requirements of the particular case. Many of the failures of herniotomy have been due to too much rather than too little surgery. Recurrence develops usually at the pubic end of the canal and not at the internal ring where the hernia occurred originally.

Andrews has been treating an increasingly high percentage of cases by simple removal of the sac sometimes with a stitch or two in the endo abdominal fascia to tighten up the internal ring and closure of the canal without further surgery. This operation is sufficient for most hernia in young children and for a moderate percentage of recently acquired hernia in adults. In such cases the peritoneally lined sac is the only true abnormal factor. The canal is intact. The muscular and aponeurotic structures have not been stretched or torn by prolonged tension of the hernia and the internal ring is little if any enlarged.

In old hernia a very constant finding is atrophy of the lower fibers of the conjoint tendon. The tendon lies a long way from Poupart's ligament. It no longer inserts onto the pubic bone but inserts onto the rectus sheath so that a wide triangular hole is left. The endo abdominal fascia is stretched and thin as it is the only structure lying between the peritoneum and the external oblique aponeurosis. Therefore the problem that confronts the surgeon is not simply the removal of a small sac but the removal of a large sac involving considerable trauma to the cord and the closure of a large defect in the abdominal wall. The ideal procedure would be to bring the conjoint tendon down to Poupart's ligament below the cord as described by Bassini but this is possible in only about 30 per cent of the cases. Andrews draws down the endo abdominal fascia like a shutter for 1 or 2 in and sutures it to Poupart's ligament for the entire length of the canal. In this way is formed a floor for the inguinal region which should preclude the possibility of recurrence.

The immediate results of this type of operation have been very gratifying. The relief of pain is more marked than after the Bassini and Andrews operations.

MORRIS H. KAHN, M.D.

Short A. R. Symptoms Due to Mesenteric Lymphadenitis. *Lancet* 1928 CCXV 909

Mesenteric lymphadenitis is common and its manifestations are numerous. The glands of the small gut which are said to number about 200 lie in 3 sets between the layers of the mesentery. Those of one set are situated close in the margin of

the bowel. Those of another set which are more numerous are arranged along the loops of the arterial arcades and the ramus intestinales and those of another and still more numerous set lie along the main trunk of the superior mesenteric artery.

The glands draining the ileocecal angle are (1) the ileal glands in the mesentery of the terminal ileum (2) the anterior ileocolic glands (3) the posterior ileocolic glands, in the angle between the ileum and caecum and (4) the appendicular glands (not constant) in the meso appendix. The gland draining the large intestine are (1) the epiploic glands lying on the bowel wall (2) the paracolic glands along the arterial arcades (3) the intermediate glands lying along the course of the main colic vessels and (4) the main group of glands at the origin of the main colic arteries. Some of the lymph nodes draining the colon lie very close to the ureters a fact of clinical importance.

In simple lymphadenitis the lymph nodes are enlarged and soft white or pink on section and usually not adherent to the layers of the mesentery. It is difficult to say just what degree of enlargement constitutes a pathological state.

Mesenteric lymphadenitis is very common in children. When a lymph gland in the mesentery becomes inflamed and swells and especially when it becomes adherent to and fixes the peritoneum covering pain may result. It seems reasonable to assume that mesenteric glands are frequently responsible for attacks of fever without obvious cause. They may produce violent pain simulating renal colic the pain of appendicitis or attacks of mid abdominal pain not related to food and with or without a rise in the temperature.

In a few cases tuberculous glands may form easily palpable swellings in the abdomen which are rounded in outline slightly tender and fairly firm in consistency. On rare occasions tuberculous mesenteric glands may rupture.

In the great majority of cases a cure results in the course of years. In certain groups of cases however surgical treatment is advisable. Operation is indicated when the attacks of pain are very violent and recur at frequent intervals when there is a fair probability that the trouble may be due to appendicitis when a large lump of uncertain nature is found in the abdomen and when an abdominal catastrophe develops.

MORRIS H. KAHN, M.D.

Desgouttes L. and Ricard A. Cysts of the Mesentery (A propos des kystes du mésentère). *J. de chir.* 1928 XXVI 269

A woman of forty nine years came to the hospital for treatment for an abdominal tumor which she had first noticed several months before. The only symptom was a feeling of heaviness in the lumbar region.

Operation revealed a cystic tumor intimately adherent to the root of the mesentery. The removal

Occult blood detected by the benzidine test is usually present in the feces at some time and indicates ulceration. When associated with a mechanical deformity achlorhydria is strong presumptive evidence of a growth. The X ray examination is perhaps the most uniformly valuable of all diagnostic procedures. To obtain the earliest evidence of a gross lesion a full barium meal is necessary.

Cancer of the stomach should always be suspected when mild indigestion occurs for the first time in middle age and especially when it occurs in a male more than fifty years old. The earliest objective sign is probably local arrest of the peristaltic wave in the stomach as shown by the X ray. The tests for achylia and occult blood are of great value. A patient with gastric cancer may gain weight under dietetic treatment even though his chance of cure is becoming less favorable. JOHN W. NIZUM, M.D.

Freeman L. Partial Gastrectomy for Peptic Ulcers Coincident with Lymphosarcoma of the Stomach. *Recovery*. *Colorado Med* 1928 11: 362.

Freeman reports the case of a physician sixty years of age who for two years had suffered from gastric distress which came on from three to four hours after meals and was relieved by alkalies and food. There was no history of bleeding from the stomach or bowels. The patient had lost 35 lbs. and was weak and exhausted. The total gastric acidity was 62 and the free hydrochloric acid 42. The blood count was normal. Urinalysis and the Wassermann test were negative. X ray examination revealed a filling defect the size of a quarter on the lesser curvature near the pylorus. The preoperative diagnosis was peptic ulcer with possible malignancy.

At operation the walls of the entire transverse portion of the stomach and duodenum were found to be pale and twice as thick as normal. Near the pylorus there was a firm indurated area the size of a dollar and in the gastrophrenic omentum and along the aorta there were numerous enlarged glands. A partial gastrectomy was performed the line of excision passing through frankly diseased tissues.

Recovery was uneventful. The patient gained rapidly in weight and strength. Six months later moderate enlargement of the cervical and inguinal lymph glands appeared and deep X ray therapy and Coley's toxins were given to a time. Eighteen months after the operation the stomach appeared normal on X ray examination.

Examination of the resected portion of the stomach and duodenum revealed a uniform thickening with round celled infiltration of the stomach walls involving principally the submucosa. Adjacent to the pylorus on the lesser curvature there were two indurated peptic ulcers. When sections of the stomach and lymph glands were sent to several laboratories four diagnoses were made viz carcinoma lymphosarcoma inflammatory tissue and chronic granuloma. The final diagnosis decided upon was lymphosarcoma. JOHN W. NIZUM, M.D.

Hurst A. F. Recent Advances in the Treatment of Gastric Diseases. *Brit Med J* 1928 11: 779.

The modern fractional test meal not only shows how much acid is secreted but indicates accurately the motor efficiency of the stomach and is the only means by which the presence of gastritis may be recognized.

For the development of an ulcer the presence of free hydrochloric acid is required. In the treatment of ulcer a diet must be chosen which produces the minimal secretion of acid. Atropin and olive oil should be given to inhibit the secretion of acid and alkalies should be administered to neutralize the acid secreted.

In Hurst's opinion milk should form the basis of all ulcer diets as its fat inhibits the secretion of gastric juice and its protein combines with some of the free acid. Freezer, Gibson and Matthews have demonstrated that milk neutralizes approximately its own volume of 0.3 per cent hydrochloric acid. Purely carbohydrate diets have none of the neutralizing action of milk. Milk acts more satisfactorily when given in small quantities hourly than when given in larger quantities at intervals of from two to four hours. The ingestion of milk every hour leads to complete achlorhydria for a considerable part of the day. One of the best neutralizing agents is milk combined with sodium citrate. Occasionally in the afternoon and evening the presence of free acid before meal time necessitates the addition of alkalies.

Hurst believes that the essential exciting cause of gastric and duodenal ulcer is infection. He therefore emphasizes the importance of eradicating all foci of infection. Tobacco is another factor in the etiology as it causes increased acid secretion.

Hurst limits the patient to an ulcer diet until there is complete disappearance of spontaneous pain, epigastric tenderness, muscle rigidity, occult blood in the stools and X ray evidence of the crater of the ulcer.

On account of the ulcer diathesis the patient should not return to his old habits of living after healing of the ulcer.

Until recently it has been thought that equivalent doses of various alkalies can be calculated from the chemical formulae. At the author's request Gibson, Freezer and Matthews estimated the hydrogen ion concentrations of various alkalies by adding an excess of alkali to a constant amount of 0.3 per cent hydrochloric acid. Their findings are summarized as follows:

1. Magnesium oxide and peroxide and sodium bicarbonate produce an alkaline solution which reaches a maximal and constant degree of alkalinity within one minute. Magnesium oxide has a higher concentration than sodium bicarbonate. Magnesium carbonate attains neutrality in less than one minute and then becomes alkaline reaching the maximal alkalinity in two minutes.

2. Sodium and potassium citrates and tribasic calcium and magnesium phosphates become neutral within one minute. Calcium carbonate attains

Of 121 patients who were followed for a period of three and a half years about 80 per cent were cured and about 10 per cent showed improvement in their condition

CHARLES F. DuBOIS M D

**Walton A J The Results of Surgical Treatment of Gastric and Duodenal Ulcer** *Brit M J* 1928 II 784

Walton reports the results obtained in 172 cases of gastric and duodenal ulcer operated upon in the period from 1920 to 1924. A satisfactory result was obtained in 84.9 per cent of the total number of cases and in 86.5 per cent of those of pyloric ulcer. By satisfactory result the author means that the patient is now on a full diet and able to live a normal life.

These results are compared with those obtained by Smith in 214 cases treated medically in the period from 1913 to 1922. Of Smith's male patients 70 per cent were cured, 15 per cent were benefited, 31 per cent were not benefited, and 10 per cent died. Of Smith's female patients 40 per cent were cured, 20 per cent were benefited, 25 per cent were not benefited, and 15 per cent died. In 5 of Smith's cases carcinoma developed.

CHARLES F. DuBOIS M D

**Solkov B and Iljin S Gastric and Duodenal Ulcer and the End Results of Gastro Enterostomy In These Diseases** (*Ulus ventriculi et duodeni und Dauerresultate nach der Gastro enterostomieanlegung bei diesen Erkrankungen*) *Verh Chir Arch* 1927 III 368

In the period from 1914 to 1926 gastro enterostomy was performed in 1,022 cases of ulcer admitted to the Torzok Hospital. There were 3 deaths, a mortality of 3 per cent. The operation revealed a gastric ulcer in 856 cases, a duodenal ulcer in 120 cases and scarring and adhesions in 3 cases. Seven hundred and seventy five of the 856 patients suffering from gastric ulcer and 100 of those with duodenal ulcer were males. Most of the patients were of middle age.

The indications for operation were quite broad and no dietary or other treatment was given before the intervention. In nearly all cases local anesthesia was used and a posterior gastro enterostomy with a short jejunal loop was done. The postoperative complications were as follows:

1. **Pneumonia** This complication developed in 30 per cent of the cases and resulted in 10 deaths. More than half of the patients were suffering from bronchitis and were not treated for this condition before the operation.

2. **Embolism** Fatal embolism of the pulmonary artery developed in 1 case eight days after the operation.

3. **Vicious circle** There were 5 cases of this complication with 2 deaths.

4. **Acute dilatation of the stomach** In the 1 case in which this complication developed the patient recovered.

5. **Vomiting** Vomiting occurred in 10 per cent of the cases. Vomiting of blood occurred in 5 cases with 2 deaths. In 3 of the cases with hemorrhage a second laparotomy was done. In 1 case the source of the bleeding was found to be a blood vessel which had been perforated with the suture needle.

6. **Intestinal hemorrhage** One patient died from intestinal hemorrhage seven days after the operation.

7. **Opening of the abdominal wound** This occurred in 4 cases and was followed in 1 instance by death from peritonitis.

8. **Ileus** Four patients died from this condition.

9. **Sepsis** There were 8 deaths from sepsis.

The end results three years or longer after the operation could be determined in the cases of only 580 of 841 patients. Four hundred and forty one patients (71 per cent) were completely cured or in a relatively good condition. Twenty one (3.6 per cent) had been benefited but were not able to do much work. The condition of 15 (2.6 per cent) was unchanged. Seventeen (2.9 per cent) were in very poor condition.

In the course of ten years 123 patients had died. Three hundred and twenty seven died from causes not related to the gastric disease, 36 from unknown causes and 8 from carcinoma. Three of those who died suffered from gastric disturbances intermittently and 34 suffered from such disturbances constantly.

In conclusion the author who seems to be an ardent advocate of gastro enterostomy asks whether operation is not performed for gastric ulcer too infrequently and answers himself in the affirmative.

ALFRED ZI

**Spriggs E The Early Recognition and Treatment of Cancer of the Stomach** *Brit M J* 1924 338

This article reviews a series of thirty-eight cases in which a diagnosis of cancer of the stomach was made on the basis of the clinical picture supplemented by roentgenological and chemical studies. In some of the cases the presence of the lesion was demonstrated also by operation. Spriggs states that before the discovery of the roentgen rays the diagnosis of gastric cancer was frequently difficult, the nutrition was impaired or a palpable tumor developed and the prognosis was hopeless. Today it can be made in the early stages but there is still too long an interval between the onset of the earliest symptoms and an adequate clinical examination. Too many persons with gastric cancer are treated for indigestion until the chance for surgical removal of the lesion has passed.

The author's patients were twenty seven men with an average age of sixty three years and eleven women with an average age of fifty five years. The symptoms were discomfort or pain in the abdomen, anorexia, nausea, loss of weight, vomiting, flatulence or distention, heartburn and eructation, weakness, dysphagia or inability to take solids, constipation, hematemesis, diarrhea and tumor.

The amount of distention of the segment the loss of blood the extent of trauma and distress and the circulatory instability are directly proportional to the length of the strangulated segment

3 The type and extent of the vascular obliteration in turn has a profound effect on the severity of the lesion. This is due to its influence on the production of the distended necrotic state of the bowel

4 Death from a shock complex can be produced in the absence of bacteria from the involved intestine if the lesion is extensive. There is a striking resemblance between the clinical syndrome of strangulation and that of a histamine reaction

5 In short segments and those in which gangrene develops more slowly and with its ever present injury of the mucosa absorption of the toxic bowel content and necrotic tissue takes place. Intoxication and shock are both manifest to a less degree

6 Rupture is usually dependent upon the rapidity of the distention and the necrosis of the segment

7 If the case is allowed to progress past the twenty four hour period fluid and chloride loss may be a complicating factor

8 Experimental work with regard to intestinal obstruction should be done under local or spinal anesthesia. These are the preferred types of anesthesia also for surgical treatment of the condition

9 Fluids by mouth should be discontinued. Early relief of the obstruction which prevents the many complications of delay is the means by which the mortality rate in this condition is lowered

10 Enterostomy alone is of questionable value when used as the only procedure of intervention. Excision of necrotic segments of bowel is best accomplished by the gun barrel method. In cases with strangulation all anti shock measures should be employed as an adjunct to surgical removal of the involved bowel

Obstructions of the large bowel are not included in the study of simple occlusion as their symptoms are usually not acute

Orr T G and Haden R L. The Toxæmia of Intestinal Obstruction. *J Am M Ass* 1928 xci 1529

McIver M A and Gamble J L. Body Fluid Changes Due to Upper Intestinal Obstruction. *J Am M Ass* 1928 xci 1589

Orr and HADEN state that the chief and characteristic chemical changes in the blood in acute obstruction of the pylorus and upper intestinal tract are an increase in the non protein nitrogen a decrease in the chlorides and a rise in the carbon dioxide combining power of the plasma. They retract their original hypothesis that the fall in the blood chlorides is due partly to a combination of the chloride ion with a toxic body in a process of detoxication as they now believe that it is due partly to the loss of chloride in the form of hydrochloric acid through vomiting. In the toxæmia there is a greater loss of chloride than of sodium. The excess sodium combines with carbonic acid to form sodium

bicarbonate which is measured by the carbon dioxide combining power of the plasma

Obstruction of the upper intestinal tract is associated also with dehydration a marked increase in the blood fibrin the formation of which is greatly accelerated in any condition with tissue injury and an increase in the viscosity of the blood

These changes can be prevented and life prolonged by the administration of water and sodium chloride

McIVER and GAMBLE regard the fatal effects of loss of the digestive secretions such as occurs in simple blockage of the pylorus or upper intestinal tract as the result of extensive withdrawal of inorganic substances chiefly sodium and chloride ion from the blood plasma and the interstitial body fluids. This explanation makes unnecessary the hypothesis of a toxin absorbed from the gastro intestinal tract or a loss in the digestive secretions of some vitally important organic substance. They emphasize however that they regard other types of obstruction the closed loop and obstruction with gross interference with the circulation as representing quite different pathological and physiological pictures

HARRY W FINE M D

Morton J J and Stabins S J. The Relation of Bacillus Welchii Antitoxin to the Toxæmia of Intestinal Obstruction. *Experimental Studies Arch Surg* 1928 cvii 860

In experiments on dogs Morton and Stabins found that when intestinal obstruction was produced by dividing the jejunum and turning in the loops to in below the ligament of Treitz the dogs died after from three to ten days from a toxæmia manifested by clinical signs and changes in the blood chemistry. In another series of experiments they found that after the development of a well marked toxæmia recovery sometimes resulted after an operation to relieve the obstruction if bacillus welchii antitoxin was administered intravenously but failed to result if other antitoxic sera were used. When bacillus welchii antitoxin was injected intravenously the appearance of toxic symptoms seemed to be delayed

HOWARD A MCKNIGHT M D

Simons E J. Multiple Diverticula of the Small Intestine. *Minnesota Med* 1928 xi 752

Simons reports the case of a man fifty seven years of age who was suddenly seized with epigastric pain while pumping water. The pain was so severe that it compelled him to lie down doubled up for some time. He complained of nausea but did not vomit. Seven hours later the pain was localized in an area 4 in diameter in the epigastrium and there was board like rigidity throughout the upper part of the abdomen. A ruptured gastric ulcer was suspected

At operation no ulcer was palpable or visible in the stomach or duodenum. The small bowel was found to be cyanotic and distended with gas. The discoloration extended downward for about 3 ft. No pulsation could be felt in the mesenteric artery. A 2 ft portion of the upper mesentery of the small



neutrality in two and one half minutes. None of these solutions becomes alkaline.

3 Bismuth oxycarbonate only reduces the acidity and never becomes neutral. Aluminum silicate and hydroxide which are frequently used for the relief of acidity have even a less effect.

Estimated by weight magnesium oxide is the most efficient alkali. Sodium bicarbonate has only one fourth its value. After neutralizing the acid in the stomach these two drugs stimulate the secretion of more acid. They are in fact two of the most powerful gastric stimulants known. When given in excess they produce an alkaline solution in contrast to most alkalis such as calcium carbonate, sodium and potassium citrate and trisbasic magnesium phosphate which produce a neutral solution. Sodium bicarbonate gives immediate relief of pain in most cases of ulcer but its use is followed by an increase of secretion.

Occasionally when large doses of alkalis are given in ulcer treatment a train of toxic symptoms to which the term alkalosis is applied may result. The symptoms nearly always appear within seven to fourteen days after the beginning of the alkali treatment. Anorexia and depression are noted from the first; there is difficulty in the ingestion of milk and after a time headache, nausea and vomiting occur. Usually the symptoms are not severe and rapidly disappear when the alkalis are stopped.

Chronic gastritis can be diagnosed only by means of a fractional test meal which shows excess mucus in all of the fractions. In this condition achlorhydria is often present and the quantity of free acid is always less than normal for the individual because the thick, tenacious mucus adheres to the surface of the gastric mucous membrane and blocks the mouths of the gastric glands. Only a small part of the acid gains access to the lumen of the stomach and part of the mucus acts as an alkali uniting with the free acid. An important part of the treatment is gastric lavage to wash the stomach free from mucus. This is best done in the morning when the stomach is empty. Hydrogen peroxide is the best agent for the lavage.

Achlorhydria is a more common condition than has been generally assumed. The author reports its occurrence in 15 per cent of 762 consecutive patients with abdominal disturbances. If the lesion is due to a true achylia gastrica and not to chronic gastritis the administration of dilute hydrochloric acid will relieve the symptoms. As much as 2 dr may be given three times a day. When mixed with a pint of water this dose provides a solution of approximately the same strength as normal gastric juice.

CHARLES F. DEBEN, M.D.

Foster, W. C. Intestinal Obstruction. The Correlation of Recent Experimental Studies and Clinical Applications. *J Am Med Ass* 1928 20: 2523

Clinically there are two fundamental groups of cases of acute intestinal obstruction which include

all types of the classical lesions described. Stated briefly these are (1) cases due to the presence of bands and adhesions which cause acute simple obstruction of the gastro intestinal tract without primary vascular derangement and (2) cases due to such causes as volvulus, incarcerated hernia and intussusception in which there is obstruction of a variable length of intestine as well as interference with the vascular supply of that portion. The condition in the second group the author calls acute intestinal strangulation. He states that this grouping is also a satisfactory pathological classification. He considers it the only proper division for experimental investigation. He has produced the two syndromes in animals.

The complications of acute simple obstruction and strangulation proceed in a somewhat similar direction but vary greatly in degree, rapidity of development and severity. These facts are of paramount importance in the final outcome.

In simple obstruction of some duration there may occur above the point of occlusion a variable degree of distention, ecchymosis and superficial ulceration depending upon the level of the lesion and what the fluid food or cathartics have been given by mouth. The most feared complication is perforation at the base of the occluding structure with resulting peritonitis.

In acute strangulation there is rapid progression to gangrene with great distention of the segment. This is soon followed by an intraperitoneal transudation of toxic fluids and finally perforation.

If one recognizes the different experimental conditions under which the recent investigators of simple bowel occlusion have been made and properly interprets the various observations it will be found that most of the observations are in accord. They may be summarized as follows:

1 Simple uncomplicated occlusion of the intestinal lumen is compatible with life over a time comparable with that of a normal animal with complete abstinence from food and water. Animals with complete obstruction of the small intestine were kept alive for four weeks without any treatment except complete starvation. The blood-chloride figures remained within normal limits.

2 The induction of experimental obstruction with an abnormal mucosa and the allowance of unlimited fluid by mouth produce excessive fluid and chloride loss with the development of a hypochloremic state and complicating alkalosis.

3 If in addition to the latter state there is an alteration in the mucosa with distention and ecchymosis there is a superimposed moderate intoxication.

From this work the following deductions were made:

1 In high level lesions the course is more rapid and severe because the intestine has a higher degree of irritability and distention is more rapid. Because of the anatomical construction of this area necrosis appears more quickly from secretion and local pressure.

medical treatment consisting of dietary measures the administration of belladonna, magnesia mineral oil etc. there was slight relief of the gas but no gain in weight. In the author's opinion the symptoms were due largely to the occurrence of inflammation in the duodenal diverticulum.

The second case was that of a man of thirty four years who complained of attacks of acute indigestion with gas belching, constipation and epigastric pain after meals which was partially relieved by soda. The patient said that he was largely free from symptoms if he was careful to keep his bowels open with laxatives. For the past six weeks he had been in bed under treatment for ulcer in another hospital.

Physical examination was essentially negative. Roentgenological examination revealed a distended stomach with good tone and no evidence of gastric ulcer. Fluoroscopic examination and serial roentgenograms revealed a pocket in the first portion of the duodenum just beyond the bulb. After five hours the duodenal pocket remained filled.

The patient was put to bed treated with lacto-dextrin, turpentine stipes, enemas and belladonna and restricted to a light diet. Under this treatment there was a marked decrease in the abdominal pain and gas. At the end of two weeks the patient had gained 3½ lb, his appetite had returned and the abdominal discomfort was negligible. He was then given a full diet. At the present time he is on a liberal diet, takes mineral oil and has gained 12 lb.

JOHN W. NUTZ, M.D.

**Golden R. Non Malignant Tumors of the Duodenum.** *Am J Roentgenol* 1928 xv 495

To seventeen cases of non malignant tumors of the duodenum reported in the literature Golden adds two more. The tumors included six adenomata composed of mucous cells, five adenomata composed of Brunner's glands, three myomata, one calcified fibro adenoma, one tumor composed of fibrous tissue, one hemangioma, and one lymphangio-endothelioma.

Golden states that a non malignant tumor of the duodenum may be the cause of gastric symptoms and hemorrhage. In three of the cases reviewed the diagnosis was made by roentgen ray examination which showed a filling defect.

In the authors cases surgical removal of the tumors was followed by relief.

The author is of the opinion that a filling defect in the duodenal bulb suggesting a non malignant tumor and associated with six hour gastric retention indicates a growth arising in the stomach and protruding into the duodenum whereas a similar filling defect without retention indicates a growth arising in the duodenum itself. J. FRANK DUGGITY, M.D.

**Halpern J. The Pathogenesis and Treatment of Peptic Ulcer of the Jejunum.** (*Zur Pathogenese und Behandlung der peptischen Jejunalgesehweren*). *Von chir.* 4 ch. 1928 xix 220.

With regard to the rôle of various operative methods in the pathogenesis of peptic ulcers of the jejunum

the author states that anterior gastro enterostomy with Braun's anastomosis has a deservedly bad reputation but the ulcer develops also after other methods even the most extensive gastric resections.

Except in the very rare cases of successful medical treatment peptic ulcer of the jejunum must be treated surgically. Two procedures are used: the conservative (restoration of the original normal anatomical relations) and the radical (resection of the ulcer together with the adjoining parts of the stomach). The restoration of the normal anatomical relations (Uspensky's method among others) should be carried out in the cases in which the original gastric or duodenal ulcer is healed and there is no pyloric stenosis. However conservative methods do not by any means protect against recurrence. Resection of a peptic jejunal ulcer offers at times very great technical difficulties and prevents recurrences only when it is completed according to the Billroth II method or by suturing the stump of the stomach into the mobilized vertical segment of the duodenum. Moreover it makes great demands on the strength of the patient who is not always able to withstand the severe operation. If such a radical operation does not appear possible the surgeon must be content with resection of the peptic ulcer with end to end restoration of the continuity of the intestine and the formation of a new gastro enterostomy. This procedure gave very good results in one of the author's cases. The patient is entirely well fourteen years after the operation and although he is sixty seven years of age is able to do heavy farm work. ALIPOV (Z).

**Camp J. D. Jejunal and Gastrojejunal Ulcer and Their Associated Roentgenological Signs.** *J Am M* 1st 1928 xci 1436.

Jejunal and gastrojejunal ulcers simulate in form the usual types of gastric ulcer, namely the mucous, penetrating and perforated types. Penetrating ulcers are the most common and are usually found in the suture line or in the jejunum near the anastomosis.

Jejunal ulcers are nearly always located in the efferent loop.

The interpretation of the roentgenological signs of gastrojejunal ulcer requires an understanding of the characteristics of a normal gastro enterostomy. According to Carman the following conditions denote a normal anastomosis:

1. The meal passes freely through the stomach.
2. There is no gastric residue.
3. The duodenum is not dilated.
4. The stomach is usually smaller than is usual without a gastro-enterostomy.
5. Gastric peristalsis is not overactive.
6. The contour in the vicinity of the stomach is not deformed.
7. The efferent limb of the jejunum is neither narrowed nor markedly irregular.
8. The stomach is moderately mobile.

bowel was white. Along the course of the duodenum and upper jejunum there were multiple small diverticula extending into the tissue between the layers of mesentery. Hot applications were made to the cyanosed segment of the small bowel and the abdomen was closed. The patient made a good recovery and has remained in good health for the past eighteen months.

The report of the pathologist was as follows: It is evident that there was a temporary occlusion of the circulation of the 3 ft. of small bowel that was partially infarcted. It is also clear that there was not a thrombosis of either artery or vein. I believe that you were dealing with an extravasation of chyle into the mesentery resulting from rupture of a lymphatic. Recovery was due to the fact that the exudate was absorbed and the pressure on the vessels released before actual gangrene occurred.

JOHN W. NUZZI, M.D.

Neugebauer F. Phlegmons of the Small Intestine (Duendarmphlegmone). *Zentralbl. f. Chir.* 1928, lv, 1651.

To the forty cases of phlegmon of the small intestine reported by Buadshuh and Wolf in 1915 in all of which the uppermost portion of the small intestine was involved and death resulted, the author adds a case in which the lowermost portion of the ileum was involved and recovery resulted.

In a patient twenty-six years of age who presented the usual symptoms of appendicitis an encapsulated abscess was found surrounding the gangrenous appendix. The median wall of the abscess was formed by a 20-cm. portion of the terminal ileum that was bluish red and infiltrated. A 40-cm. portion of the ileum was resected together with the cecum and the ascending colon and the ileum and transverse colon were then anastomosed. Microscopic examination revealed phlegmonous inflammation of the small intestine due to streptococci.

SIMON (Z)

Hieske J. A. and Best R. R. Dilatation of the Duodenum or Chronic Obstruction of the Duodenum: Congenital in Origin. *Am. J. Dis. Child.* 1928, xxxvi, 1224.

Dilatation of the duodenum in the adult is now recognized as a clinical entity. The symptoms, signs, and X-ray appearance are typical. The condition is usually due to an embryonic band, a malformation, adhesions, or compression by the mesenteric root or superior mesenteric artery.

The authors report the case of an infant with constriction of the duodenum due to malformation and compression by the root of the mesentery. The result of incomplete rotation of the intestine on its mesenteric axis. The history was typical of dilatation of the duodenum in the adult and indicates the need for a more careful study of persistent vomiting in infancy and childhood and more frequent use of the X-ray when the diagnosis is difficult.

SAMUEL KAHN, M.D.

Pendergrass R. C. Duodenal Diverticula. *Am. J. Surg.* 1928, v, 491.

Duodenal diverticula may be defined as pouches or pockets in the duodenal wall which have a free communication with the lumen of the duodenum. The use of the roentgen ray in the study of the gastrointestinal tract has led to the discovery of many duodenal diverticula which would otherwise have escaped detection.

Diverticula may be classified as true and false and as congenital and acquired.

Diverticula occur most commonly in the second and third portions of the duodenum. Occasionally they contain gallstones and sometimes they undergo malignant change. They may be as small as a small pea or several centimeters in diameter. They are frequently associated with ulcer of the duodenum.

The clinical picture is not definite. The patient may complain of pain unrelieved by food and of acid eructations, nausea, and vomiting. The general symptoms may suggest gall bladder disease, water duodenitis, pancreatitis, duodenal ileus, or gastric pylorospasm. The chief aid in the diagnosis is X-ray examination.

The treatment will depend largely upon the severity of the symptoms. The usual treatment is ligation and excision of the diverticulum with invagination of the base and suture. When medical treatment is decided upon, treatment based on that for duodenal ulcer is most likely to give good results.

The author reports two cases of duodenal diverticulum. The first case was that of a woman thirty-eight years of age whose chief complaints were pain and soreness in the abdomen. Inflammation of the bowels had been manifested for nine years by gas and moderately severe pain in the right side of the abdomen. There was no history of bloody stools. The patient was constipated and took laxatives frequently. Her present illness began six days before her admission to the hospital with soreness in the lower part of the abdomen on the right side and slight nausea. The patient had vomited twice since the onset.

On physical examination the abdomen was found moderately distended and tympanitic. A diagnosis of acute appendicitis and enteritis was made and operation was advised, but the patient refused a surgical treatment.

X-ray examination revealed a distended stomach with good tone and peristalsis. There was marked pylorospasm with an irritable duodenum. A dense clump of barium was seen lying in the second portion of the duodenum. Examination in the oblique position showed a pedunculated extension from the loop of duodenum. Under the fluoroscope the pocket was seen to fill from the duodenum. After six hours the stomach was empty but the barium clump persisted in upper abdomen to the right of the midline. This was still visible after twenty-four hours in the same location.

The patient was again advised to submit to operation for the diverticulum but refused to do so. Under

peritonitis is not uncommon. The safest procedure is partial colectomy by the Mikulicz method.

Devine describes a modification of the Mikulicz operation which makes it practically a one stage procedure. The first step is identical with that of the Mikulicz technique except that the mesentery is ligated. The second step is modified in that the open ends of the bowel are closed gradually while the patient is in his bed. The extra abdominal part of the spur is clamped as soon as the blood supply is assured and a few stitches are placed to keep the mucous membrane well inverted. A few days later the clamp is removed and applied to the intra abdominal part of the spur.

When the spur has been cut through sutures are inserted where necessary and the mucous membrane is dissected away. Some of the sutures cut out but after three or four weeks the extra abdominal part of the intestine is practically closed and has reached the level of the abdominal wall. Under local anesthesia this stump is then dropped beneath the muscles and closed over.

The author has employed this technique in eight cases with only one death. The operation is of value especially for old and debilitated patients and in cases in which it is not deemed advisable to take the time necessary for the anastomosis at the primary intervention. JOSEPH W. NEZLUM, M.D.

**Dumbadze D. Chronic Appendicitis in Children**  
(Zur Frage ueber chronische Appendicitis bei Kindern.) *Leibn. Chir.* 1927, 21: 77

In a period of eight months the author operated upon forty children for appendicitis. On the basis of these cases he concludes that appendicitis is very common in children but very rare in infants and occurs more frequently in girls than in boys. With the first menstruation the pain in the iliocecal region is increased. In the author's opinion there is a familial tendency to develop appendicitis. In children the condition does not have a typical onset. It begins with constipation, headache, anorexia and nausea or vomiting. Only later is there an acute attack such as occurs in adults and this usually lasts only a few hours. In general there is no reliable symptom for the early diagnosis of appendicitis in children but the occurrence of nausea and constipation is very suggestive of the condition.

The author does not approve of roentgen examination. He believes that in the cases of children it is dangerous.

In sixteen of the cases reviewed the appendix appeared macroscopically normal but showed microscopic changes. In twenty four cases it presented marked gross changes. In twelve cases it contained fecal concretions in five oxyuris vermicularis and in others hair bristles nut shells etc. In one case that of a thirteen year-old girl sigmoiditis developed and two operations were necessary. In thirty four of the cases the operation was followed by complete relief but in four the pre-operative disturbances persisted.

In the author's opinion appendicitis in children should be treated surgically and the operation should be performed early when possible.

KOCH (Z)

**Fellows H. H. What Is a Chronic Appendix?** *Med. Clin. N. Am.* 1923, 21: 611

Chronic appendicitis is characterized by atrophy of the glands and lymphoid tissue with a subsequent replacement fibrosis. It frequently follows an acute inflammatory reaction. The fibrotic changes may or may not cause obstruction or obliteration of the lumen of the appendix. When obstruction or obliteration occurs a cystic dilatation may develop. Fecal concretions, foreign bodies and congenital and acquired bands may cause chronic disease of the appendix.

Chronic appendicitis is most common in young adults. As a rule it causes a dull pain and definite tenderness in the right lower quadrant of the abdomen. The symptoms do not follow an acute attack directly but develop gradually. They may be persistent or intermittent. In some cases they may be interrupted by an occasional acute exacerbation of varying intensity.

In from 65 to 70 per cent of the cases the roentgen ray is of aid in the diagnosis. The two most reliable X-ray findings are retention of barium in the appendix and evidence of tenderness to pressure noted on fluoroscopic examination. An appendix filled with barium after forty eight hours when the remainder of the colon is empty is of more significance than an appendix filled with barium after seventy two hours when the transverse and descending colon still contain a part of the meal.

HOWARD A. MCKENIGHT, M.D.

**Bychovsky O. The Question of Rectal Carcinoma**  
(Zur Rectumcarcinomfrage.) *Leibn. Chir.* 1927, 21: 11

The author has operated upon 123 cases of malignant lesions of the rectum. In 87 a radical operation of the sacral type was done but in 35 the condition was so far advanced that only a colostomy was possible.

Bychovsky has found carcinoma in 8.5 per cent of all operations on the rectum. It is the third most frequent carcinoma cancer of the breast being the most frequent and cancer of the stomach next most frequent. In only 4 of the 123 cases reviewed was a sarcoma discovered. The author noted that cancer of the rectum was more frequent and more malignant in the second half of the war after 1916. The most common type was the adenocarcinoma. The posterior wall of the rectum was involved more frequently than the anterior wall. Circular involvement was least common. The carcinoma was situated most frequently in the ampulla next most frequently in the rectum and least frequently in the anus. Because of their tendency to undergo malignant change papillomata and polyps in adults should be treated as cancer. Metastases of cancer of the rec-

9 The stomach is not deformed and does not show a tendency toward spasticity or toward hour glass formation

The roentgenological signs of gastrojejunal ulcer are of two types the direct and the indirect. The direct signs which indicate the lesion itself, are an ulcer niche or crater deformity about the stoma partial or complete occlusion of the stoma irregularity of the jejunum and gastrocolic fistula. The indirect signs are gastric retention, hyperperistalsis dilatation of the stomach spasticity of the stomach dilatation of the duodenum and spasticity of the jejunum. These are not positive indications of a lesion but collectively or in combination they may suggest disease.

The author discusses each of these signs at some length. Special stress is placed on the niche which the author believes is the most important finding in these conditions. In support of this view he cites ten consecutive positive cases in which a niche or crater was disclosed eight times. An accurate diagnosis requires careful palpation under the fluoroscope with the patient in the upright position. Examinations should be made with small quantities of barium usually one or two swallows are sufficient. Stomal and jejunal craters invariably fill with the first swallow of barium and the niche is best seen at this time. It will stand out as a remaining shadow of increased density in the stoma or as a projection about 1 cm. in diameter from the contour of the jejunum. In the latter case it is usually in the efferent loop and rarely more than 5 cm. from the anastomosis. The shadow must be differentiated from barium sticks retained by gastric rugae or jejunal folds. The latter can be effaced or changed by pressure or manipulation. Niche shadows will remain unchanged or will become more pronounced under pressure. If they empty they will reappear. Questionable shadows should be confirmed by a second examination. *ADOLPH HARTUNG, M.D.*

**Porzell W. Perforated Peptic Ulcer of the Jejunum Following Perforation of an Ulcer of the Duodenum.** (Das perforierte Ulcus pepticum jejuni im Gefolge des Zwölffingerdarmgeschwürs durchbruches) *Zentralbl. f. Chir.* 1923 IV 1740

A man thirty one years old who was treated by gastro-enterostomy with a Braun anastomosis for perforated ulcer of the duodenum came to operation six months later for a peptic ulcer that had perforated into the peritoneal cavity.

Distal to the gastro-enterostomy a perforation the size of a pea was found in the loop of jejunum. There was no trace of the old ulcer in the duodenum. Resection was done by the Kroenlein Roux method with a Y anastomosis. Two thirds of the stomach including the gastro-enterostomy and the Braun entero-anastomosis were removed. The blindly closed efferent loop of jejunum was fastened by end to side anastomosis to the remaining part of the stomach and the blindly closed afferent loop of jejunum fastened side to side to the efferent loop.

The resected specimen showed an ulcer the size of a penny with a pea sized perforation on the distal side of the intact anastomosis.

The operation was followed by a smooth convalescence but the patient did not obey the instructions given him regarding his diet and developed chloical and roentgen signs of a new peptic ulcer at the site of the gastro-intestinal anastomosis.

On the basis of this case and similar cases reported in the literature, the author advises against gastro-enterostomy in cases of freely perforating duodenal ulcer. He believes that if the patient can be nourished parenterally and rectally for a sufficiently long period of time the best treatment is suturing of the perforation. Under such circumstances the Eberberg jejunostomy also is contra indicated. If the general condition and the length of time that has elapsed since the perforation do not allow primary resection secondary resection is the relatively surest preventive of peptic ulcer of the jejunum. From the reports of Burgfield and Harlinger it seems to the author doubtful whether the Billroth I or II method should be used. The fact that disturbances suggesting ulcer may recur as in the author's case even after extensive resection with a change in the acid leads to the conclusion that the after treatment should be left to the internist. *LOUIS (Z)*

**Cancelmo J J. Carcinoma of the Jejunum.** *Ann Surg.* 1918 LVIII 921

Less than 1 per cent of carcinomata of the gastrointestinal tract occur in the small intestine. Unless a carcinoma of the small intestine is obstructive the physical findings are few. Because of the fluidity of the contents of the small intestine the mass is often not palpable and unless the lesion is ulcerative blood is not found in the stools. Even the roentgenogram seldom indicates that the lesion is a carcinoma.

The author reports the case of a woman thirty three years of age who gave a history of indigestion of eight years duration. During the last few years this condition had become more severe and for eight months there had been slowly increasing enlargement of the abdomen. The patient stated that her appetite was poor and that about an hour after each meal she had cramp like pains in the center of the abdomen. She had always been constive vomiting occurred almost daily.

Operation revealed a large mass involving about 1/3 of the jejunum. This was found to be an adenocarcinoma primary in the mucosa of the jejunum which had invaded the muscular and serous coats. *SAMUEL KAHN, M.D.*

**Devine R B. Colon Surgery in the Debilitated.** *J. College Surg.* 1928 1 173

Surgery of the colon is associated with danger because of the fact that the large intestine has a poor blood supply and highly septic contents. The presence of a carcinoma or chronic obstruction lowers the patient's resistance wound healing is slow and

Petzetakis Amoebic Cholecystitis. The Presence of Amoebæ in the Pus of Purulent Calculous Cholecystitis (De la réalité de la cholecystite amibienne. Présence d'amibes dans le pus d'une cholecystite calculieuse purulente). *Bull et mêm Soc méd d'hop de Par* 1928 xlii 1295

The author has repeatedly maintained that amoebic dysentery is only the best known of the many manifestations of amoebic infection and that there is an amoebæmia that may result among other manifestations in amoebic cholecystitis.

In this article he reports the case of a woman of sixty five years who entered the hospital with signs of suppurative cholecystitis. The gall bladder was enlarged and adherent. Cholecystotomy was performed and a large stone was found in the common duct. Microscopic examination of the fluid showed many amoebæ and cysts. The gall bladder was drained. After six injections of 0.04 gm each of emetin the fever subsided and the patient was discharged cured.

In this case there was no history of dysentery. The cholecystitis did not result from an abscess of the liver because the liver was found normal and the symptoms from the beginning were those of cholecystitis. Such a cholecystitis may be brought about by blood infection in the course of an amoebic infection that has not caused intestinal disease by the ascent of cysts traversing the duodenum or by descending infection from an amoebic hepatitis that has not caused abscess. The case is of interest also with respect to the pathogenesis of biliary calculi which are so frequent in Egypt. Without doubt the amoebic infection was the cause of the large gall stone that was found in the common duct.

If cholecystitis caused by amoebæ is diagnosed early the prospects for cure are better than in bacterial cholecystitis. If a cure is not obtained early the gall bladder remains a reservoir of amoebæ from which dysentery may develop.

AUDREY G. MORGAN, M.D.

Haberer H. Surgery of the Biliary Tract (Zur Gallenwegchirurgie). *Arch f Verdauungs Krankh* 1928 xliii 155

In 1925 the author reported that in 565 cases in which he operated for gall stones there was no instance of fatal peritonitis developing entirely unexpectedly, i.e. under conditions that could not have been explained either by the findings at operation or by the nature or technique of the operative procedure. In 154 cases operated upon in the last two years there were 2 cases of peritonitis. In both of these cases following a simple entirely clean cholecystectomy a closed empyema was found and the bed of the wound was therefore drained. In 1 case the peritonitis had apparently started in a stitch abscess around a catgut suture that had been used in suturing the bed of the gall bladder.

Observations at operation in 2 other cases gave the author the opportunity to explain such puzzling instances of peritonitis. In the first case in which

there was an empyema great care was taken in the extirpation of the organ not to injure the peritoneal covering of the undersurface of the liver but just as Haberer was about to suture the bed of the liver he noticed drops of pus coming in large numbers from the peritoneal covering. He is not inclined to the belief that this was a case of suppurative inflammation of the lymph vessels since we know that in general lymph vessels are such delicate structures that even when suppurative infection is present and the vessel is cut across it is hardly ever possible to see pus with the naked eye. He believes rather that this was a case of numerous aberrant ducts into which the pus from the empyema entered directly, such ducts usually being connected on one side with the gall bladder passing obliquely through its wall and on the other side with the liver.

Haberer reports a case in which a second laparotomy was necessary twenty four hours after the first operation because after closure of the abdomen without drainage there had been an escape of bile beneath the liver. The cystic duct ligature was in good condition but a continuous oozing of bile occurred from the bed of the liver which was covered with peritoneum.

In a second case reported there was an aberrant duct of remarkably large size. The patient was a forty seven year old woman who following frequent severe febrile attacks decided to submit to operation because the last attack persisted after a week. In the course of a retrograde cholecystectomy the exposure of the neck of the gall bladder met with difficulties on account of many areas of fresh inflammation in the old indurated adhesions. In separating the gall bladder from its bed the surgeon suddenly opened up a duct lying beside the gall bladder and a large amount of bile escaped. He immediately examined the deep bile ducts thinking that he might have injured the hepatic duct but the deep bile ducts were found intact. The duct proved to be as was demonstrated by the opened gall bladder specimen a particularly large aberrant duct. A large quantity of bile was evacuated through the drain the quantity became even greater after the removal of the strip of gauze on the sixth day. Doubtless the cystic duct ligature had cut through in the inflamed tissue.

The patient made a good recovery and the fistula finally closed but five days after the operation pain, loss of appetite and an increasing icterus began. At a second laparotomy it was found that the common bile duct was compressed by about 1/2 liter of bile that had collected between the adhesions of the stomach, the large intestine and the liver. The bile ducts were dissected from the adhesions with difficulty whereupon the stump of the cystic duct was found to be open. A T-drain was inserted since a sound could be passed into the bile ducts with ease. The icterus rapidly disappeared. The patient's condition remained good so long as the T-drain remained in the common bile duct. When the drain was removed a bile fistula developed and the

tum are spread by the lymph and blood routes. They involve first the liver and then the bones. The course of rectal cancer is much more malignant and more rapid in young than in old patients.

The author advises diagnostic biopsy when rectal carcinoma is suspected but emphasizes that this should be done with the cautery instead of the scalpel.

In general the prognosis of cancer of the rectum is better than that of cancers in other organs such as the stomach and breast. If not operated upon rectal cancer usually causes death within three years.

Of the author's 87 patients who were subjected to radical operation 15 (17.4 per cent) died following the operation whereas of the 35 subjected to colostomy 4 (11 per cent) died as the result of the operation. Of the 46 patients who could be traced after the radical operation 17 were alive after three years, 14 were alive after five years and 7 were alive after ten to twenty-four years.

The author prefers spinal anesthesia for the radical operation. The procedure of choice he believes is the sacral method. If this is not adequate he uses the combined abdominodorsal approach and in cases in which the carcinoma is situated very high the abdominosacral method. Even when only the formation of an artificial anus is possible the patient is greatly benefited and gains weight.

LOCH (2)

#### LIVER GALL BLADDER PANCREAS AND SPLEEN

Wangensteen O H. The Hemorrhagic Diathesis of Obstructive Jaundice and Its Treatment. *Ann Surg* 1928 LXXVIII 845

One of the most important causes of death following surgical intervention for the relief of biliary obstruction is hemorrhage. The retention of bile in the organism *per se* is probably not responsible for the tendency to bleed and the alteration in the coagulation of the blood in icterus. The explanation lies rather in the injury of liver tissue and the diminution of liver function consequent upon the biliary obstruction.

The retention of bile pigments in obstructive jaundice is thought to cause a functional deficiency in calcium and to render the blood calcium less available for coagulation of the blood. An actual quantitative deficiency of blood calcium however does not occur. Calcium is a good remedy to reduce the prolonged extravascular clotting time of the blood in biliary obstruction.

The treatment most urgently indicated to prevent hemorrhage in obstructive jaundice is early relief of the biliary obstruction. MORRIS H. KAHN, M.D.

Bockus H L and Gershon Cohen J. Simultaneous Non Surgical Drainage of the Gall Bladder and Intravenous Cholecystography. *Arch Int Med* 1928 XLII 735

The authors report their results in nine cases in which non surgical biliary drainage was performed

simultaneously with cholecystographic studies. The stimulants used to evacuate the contents of the gall bladder were 33 per cent magnesium sulphate, 50 per cent magnesium sulphate and olive oil. A marked reduction in the size of the gall bladder was found in every case. The patients were prepared for the study by the use of tetra iodophenolthalein. Three and five tenths grams of the dye dissolved in 100 c.c. of normal salt solution were given intravenously at 9 p.m. after a fat meal of cream and milk had been ingested at 5 p.m. Roentgenograms were made at 9:30 the following morning and also subsequent to the use of the various stimulants.

Of the three stimulants employed olive oil was the most effective but the gall bladder was not emptied completely in any case. According to the size and density of the shadow emptying of more than one half occurred in seven cases. The administration of a fat meal by mouth brought about further evacuation of the contents of the gall bladder. In the two other cases no further change occurred.

The authors conclude that medical biliary drainage properly conducted will evacuate the gall bladder as well as a fat meal in 30 per cent of cases and that it will cause an appreciable drainage of bile from a normal gall bladder in practically every case.

MANUEL E. LICHTENSTEIN, M.D.

Feinblatt H M. The Infrequency of Primary Infection in Gall Bladder Disease. *New England J Med* 1928 CCXIX 1073

Four hundred gall bladders removed at operation were studied pathologically. In 6 cases the condition found on gross examination was acute empyema. Gall stones were present in 60 per cent of the chronic cases and 63 per cent of the acute cases. In 48 per cent of the cases the clinical diagnosis was chronic cholecystitis and operation was performed during a quiescent period of the disease. Forty-two per cent of the patients who were admitted to the hospital during an attack were considered to be suffering from acute cholecystitis. Fifty per cent of the total number were under forty years of age. The ratio of females to males was 4:1. As the result of his study Feinblatt draws the following conclusions:

1. Histopathological study of gall bladders removed at operation indicates that the importance of infection in the causation of cholecystitis has been greatly over-estimated while the importance of metabolic and mechanical factors has not received due consideration.

2. Primary infectious lesions of the gall bladder are exceedingly rare and local infection arising from this organ has not been proved.

3. Since cholecystitis seldom gives rise to peritonitis the emergency treatment of gall bladder disease can in no sense be compared with that of appendicitis.

4. The treatment of cholecystitis is primarily medical and becomes surgical only when complications of a mechanical nature develop.

FRED C. ROBINETTER, M.D.

lesions are classified as (1) absence of the left half of the diaphragm, (2) the thoracic stomach (3) eventration of the diaphragm (4) congenital hernia and (5) acquired hernia.

Absence of the left half of the diaphragm has been recognized at autopsy in surgical operations and roentgenographically. Its recognition is of particular importance if surgical intervention is contemplated as it is inoperable. Care must be taken not to ascribe too much importance to trauma in making a diagnosis of diaphragmatic hernia since in cases of congenital lesions there is often a history of trauma without any etiological relationship to the condition. When absence of the left half of the diaphragm has been determined roentgenographically it is desirable to ascertain the contents of the left half of the chest in the same manner as this knowledge may be of value if lesions develop in those organs.

In cases of thoracic stomach of which two have been diagnosed by the author the diaphragm is of normal form and intact on both sides but the stomach is entirely within the chest cavity. The esophagus is very short and the duodenum or in some cases the pyloric end of the stomach passes through the opening in the diaphragm which would ordinarily accommodate the esophagus. Surgical intervention is not necessary or advisable in the treatment of these cases unless a complication develops.

Eventration of the diaphragm usually occurs on the left side but at times may be found on the right

side and occasionally on both sides. The diaphragm may be as high as the second costal cartilage but on careful roentgen examination especially on lateral exposures its complete outline can be made out. Eventration is usually due to defective musculature.

In cases of congenital hernia a defect in the diaphragm present at birth allows the abdominal contents to pass into the chest cavity with or without the presence of a sac. Such defects in the diaphragm usually occur on the left side but may be present on the right side in which case the liver may block the opening sufficiently to prevent the contents of the abdomen from passing into the chest cavity. Repeated examinations may reveal parts of the stomach or colon sometimes above the diaphragm and sometimes below it thus serving to differentiate the condition from absence of the left half of the diaphragm.

Acquired hernia may occur through the esophageal orifice as the result of gradual relaxation of this opening. The condition may be diagnosed by careful roentgenoscopic and roentgenographic examination particularly with the patient in the horizontal or slightly inverted position. The cardiac end of the stomach or rarely the splenic flexure of the colon may be observed in the chest cavity alongside the esophagus. Trauma may also be a cause of acquired hernia and can be diagnosed roentgenographically by observing abdominal organs above the diaphragm.

ADOLPH HARTUNG, M.D.



general condition became worse. Later the stools again became acholic and the bile fistula re-opened. Another drain was then inserted and as a pre-cautionary measure was left in. The patient lost weight again became jaundiced and finally developed a duodenal fistula.

At a third operation the peripheral segment of the common bile duct was found to be transformed into an indurated mass. With extreme difficulty the central portion of the common bile duct was dissected free from the porta of the liver. A large quantity of bile was at once discharged. The indurated adhesions made it impossible to bring the common bile duct over to the duodenum. Hence it was necessary to mobilize the duodenum. The author succeeded in turning the duodenal fistula back over the stump of the common bile duct and stitching it to this stump and to the undersurface of the liver with a circular row of sutures. Healing was complete at the end of four weeks. Recovery was rapid and the general condition has now remained good for a month and a half.

The author states that this was the second case in which he was obliged to operate on account of fistula of the stump of the cystic duct and in both cases the operation was rendered difficult by indurations. He attributes the difficulty chiefly to the repeated attacks over a period of years which had led to severe inflammatory changes and also to the fact that in the end it was impossible to delay operation for the last inflammatory attack to clear up. Prevention of such complications lies in earlier operation. The author's chief reason for reporting these cases however was to show the important rôle that may be played by aberrant ducts. Haberer believes that they may explain many hitherto puzzling cases of peritonitis following operations on the gall bladder.

SCHEUERMANN (2)

### MISCELLANEOUS

Cohn 1. Personal Experiences in Abdominal Surgical Emergencies. *Northw St Med* 1928 xxii 505

Cohn discusses spontaneous traumatic operative and postoperative abdominal emergencies. The spontaneous emergencies include acute appendicitis perforating gastric and duodenal ulcers gastric hemorrhage due to intrinsic and extrinsic causes subcutaneous hemorrhages hemorrhages of the mucous membranes particularly those associated with splenomegaly and acute gangrenous cholecystitis. The traumatic emergencies discussed are traumatic ruptures of solid viscera particularly the spleen and hemorrhage. The operative emergencies considered are conditions arising from unintentional trauma such as injury to the common duct during a cholecystectomy injury of the intestines during an abdominal incision hemorrhage during laparotomies and sliding hernia. The postoperative emergencies discussed are intestinal obstruction alkalosis hemorrhage and rupture of the abdominal wall.

In cases of appendicitis early diagnosis and early operation will prevent many of the unfavorable sequelae. In cases of gall bladder disease emergency operations are comparatively rare. In acute cholecystitis if there is evidence pointing to perforation empyema or gangrene operation is an emergency procedure. Under such conditions cholecystectomy may prove disastrous. Therefore cholecystostomy should be done and cholecystectomy postponed until it can be performed with less danger. Perforation of gastric and duodenal ulcers requires immediate operative intervention. The possibility of perforation of the stomach should be considered when in cases with a history of indigestion sudden acute diffuse pain is followed by generalized rigidity without nausea or vomiting. Gastric hemorrhage may be associated with esophageal varicosities and varicosities in the stomach or with diffuse hemorrhage from the stomach. In the hemorrhage of purpura hemorrhagica transfusion followed later by plasmectomy will give the best results.

Except in the case of the bladder, which may be ruptured in fractures of the pelvis rupture of a hollow viscus is uncommon. Rupture of a solid viscus such as the liver or spleen is relatively uncommon. In injuries of this type pain is not a prominent manifestation. There is no evidence of shock until hemorrhage has been severe. There are two definite indications in these cases immediate operation and transfusion.

One of the most interesting of all surgical emergencies is that which occurs in the course of an operation for an apparently simple indirect inguinal hernia when instead of a few extensive adhesions are found. Moschowitz suggested that in such cases another incision might be made along the outer border of the rectus muscle as for an appendectomy and a pair of sponge forceps introduced from above to bring the abdominal viscera back into the cavity.

Hemorrhage during the course of a laparotomy may render the operation very difficult. A good exposure is necessary to discover the bleeding points. The abdomen should not be closed until all bleeding has been controlled.

Postoperative emergencies may be divided into three groups: (1) those that develop immediately after an operation such as shock and hemorrhage; (2) those that develop after from twenty-four to forty-eight hours such as acute toxemia following cholecystectomy; and (3) those that develop still later such as alkalosis ileus fecal fistula and enterostomy.

MORRIS H. KATZ M.D.

LeWald L. T. The Roentgenological Diagnosis of Diaphragmatic Hernia. *Am J Roentol* 1928 xx 423

The author discusses not only the relatively frequent acquired traumatic hernia of the diaphragm but also congenital malformations which in some respects simulate diaphragmatic hernia. The differentiation between these conditions may be of medicolegal as well as surgical importance. The

hemorrhage occurred. A third laparotomy revealed the source of the bleeding to be a ruptured follicle of the left ovary. The adnexa were removed but the patient died from exhaustion.

Histological examination of the ovaries showed a tissue rich in cells with numerous corpora fibrosa and isolated small cysts, a corpus luteum hemorrhagicum in the right ovary and a corpus luteum in the left ovary. Neither the tubes nor the uterine mucosa showed any changes of pregnancy.

The author concludes that in every case of appendicitis attention should be paid to the uterine adnexa and the incision so made that if necessary an operation on the adnexa may be performed after the operation on the appendix. MANDEL (2)

### EXTERNAL GENITALIA

Norris C. C. and Kimbrough R. A. Jr. Relaxation of the Anterior Vaginal Wall. *Am J Obst & Gynec* 1928 xvi 675

Relaxation of the anterior vaginal wall is of frequent occurrence. Cystocele is much more common in stout than in thin women and the intra-abdominal pressure is probably much greater in the former than in the latter.

One of the most frequent and annoying symptoms of relaxation of the anterior vaginal wall is partial incontinence especially upon straining or coughing. Incontinence is rarely if ever present unless the sphincter is injured. Incontinence may be marked when the vesical lesion is relatively insignificant. The reverse also may be true.

Not infrequently the vaginal mucosa covering the posterior portion of the urethra becomes hypertrophied. The hypertrophy may occur alone but is a common accompaniment of cystocele. It bears no relationship to the integrity of the sphincter. Fluoroscopic examination and roentgenograms taken with the bladder filled to capacity with an opaque liquid are direct aids in the demonstration of the lesions. The X-ray may reveal relaxation of the sphincter which cannot be detected by the ordinary clinical methods.

To cure incontinence due to relaxation of the sphincter the relaxation must be recognized and the anterior colporrhaphy modified accordingly. Post-operative X-ray examinations are of great practical value in revealing the degree of restoration obtained.

No one type of operation is applicable to all cases. Care in the selection and the performance of the operation is of the utmost importance. Absolute hemostasis is essential. A small hæmatocele insignificant in itself may result in failure to secure a symptomatic cure as may also carelessness in the placing of one or two of the important sutures.

RESUMORE in discussing this report stated that one way of dealing with relaxation of the sphincter is to take up the slack by reefing sometimes with a Lezzer catheter in the urethra.

RAWES stated that a cystocele cannot cause an injury to the vesical sphincter by dragging or pulling

as the sphincter is anterior to the ureteral ridge and the trigone the most fixed points of the bladder. The vesical injury and the injury resulting in urethrocele occur at the same time as the injury causing the cystocele. Incontinence of urine cannot be due to urethrocele with a minor injury to the vesical sphincter. A funnel shaped urethra in a cystogram does not always indicate a urethrocele or that an operative procedure other than a cystocele operation is indicated. E. L. CORNELL M.D.

### MISCELLANEOUS

Zondek B. and Aschheim S. The Hormone of the Anterior Lobe of the Pituitary Gland Its Preparation Chemical Properties and Biological Effects (Das Hormon des Hypophysenvorderlappens Darstellung chemische Eigenschaften biologische Wirkungen). *Abh Wchenschr* 1928 vii 831

The authors give a detailed report of their results with the hormone of the anterior lobe of the pituitary prepared by themselves. These supplement the facts established in their earlier implantation experiments which have been confirmed by other investigators.

The inhibitory effect upon ovulation resulting from the continued injection of the expressed juice of the pituitary which was reported by Long and Evans is ascribed by the authors to overdosage. With regard to the luteinization and the formation of atretic follicles the findings of Long and Evans are in agreement with those made by the authors. The test object used by Zondek and Aschheim for the hormone of the anterior lobe of the pituitary gland is the ovary and secondarily the vagina of the infantile mouse.

The signs of œstrus in the infantile vagina frequently run such a rapid course that they may be overlooked if smears are not taken very frequently. The effects must begin one hundred hours after the beginning of the injections. Macroscopically the appearance of bleeding points in the follicles and microscopically the finding of atretic follicles besides ripening of the follicles will be characteristic.

The hormone of the anterior lobe of the pituitary can be derived from the urine of pregnant women from which it is obtained with the ovarian hormone. In the first two months of pregnancy the urine contains from 3 000 to 5 000 units of the pituitary together with 300 to 600 units of the ovarian hormone (1 unit of the hormone of the anterior pituitary lobe being the amount which has the power when divided into six portions to produce the characteristic reaction in an infantile white mouse weighing from 6 to 8 gm. after one hundred hours). In the third to seventh months of pregnancy from 3 000 to 6 000 units of the anterior pituitary hormone) in addition to from 5 000 to 7 000 units of ovarian hormone are excreted and in the seventh to tenth months from 2 000 to 3 000 units of pituitary hormone and from 6 000 to 10 000 units of ovarian hormone are excreted. Hence the most favorable time to obtain

# GYNECOLOGY

## UTERUS

Hinselmann H. The Diagnostic Value of Colposcopy (Die Leistungsfaehigkeit der Kolposkopie) *Klin Wochenschr* 1928 vii 2183

The colposcope devised by Hinselmann may be used for

1 The early clinical diagnosis of carcinoma of the portio. In more than forty cases Hinselmann observed white areas of mucous membrane on the portio in which microscopic examination showed a typical epithelium with not rarely an infiltrating growth that was not connected with the glands. Where such an infiltrating growth with otherwise atypical epithelium was not demonstrable in these cases a carcinoma in a still earlier stage was present. The colposcope permits recognition of such very minute (fractional part of a millimeter) carcinomata at the beginning of their invasion. It reveals also atypical and essentially changed areas of epithelium in which as yet no cancerous invasion is demonstrable. It aids in the discovery of abundant material for histological examination in the early stages of cancer.

2 Examination of the vaginal mucous membrane in cases of leucorrhoea. Colpitic changes are frequently to be found when nothing abnormal is visible to the naked eye.

3 Observation of contractions of the uterus especially under the influence of drugs.

4 The study of the formation and expulsion of secretions of individual cervical glands.

5 Examination of cervical vaginal and vestibular mucous membrane in local diseases.

Hinselmann has tried out colposcopy for three years and has found it of great value especially in the early diagnosis of carcinoma of the portio.

KABOTH (G)

Masson J C and Simon H E. Fistula of the Uterus. *Am J Obst & Gynec* 1925 x 1 652

Fistula of the uterus is relatively infrequent as a postoperative complication. The diagnosis can be made almost entirely from the existence of a postoperative abdominal fistula which periodically discharges blood tinged fluid coincident with menstruation. The outstanding causes of the formation of fistula of the uterus are operations performed in the presence of acute pelvic inflammation, abscess or tuberculosis, especially those involving incomplete removal of the inflammatory tissue and the use of non absorbable suture material. Radical surgical removal of the fistulous tract, inflammatory tissue and any foreign bodies is usually indicated. This procedure is attended by a low mortality rate and good results.

Griscitelli M Jr. Hyperplasia of the Endometrium with a Report of Cases. *New Eng J Med* 1928 cxcix 1034

Hyperplasia of the endometrium is described and nine cases are reported.

The author states that hyperplasia does not represent endometrial changes in normal menstruation and has nothing to do with so called hyperplastic hypertrophic or polypoid endometritis. It is due to an ovarian disturbance rather than to infection and hence is not an inflammatory reaction. The treatment must be selected with this fact in mind. The importance of conservation in the treatment of this condition and of more co-operation between the surgeon and pathologist is emphasized.

ROLAND S CROW MD

Gelpi M J. A Review of Various Methods of Treatment of Carcinoma of the Cervix Attributable to Primary Mortality and Five Year Cures. *Radiology* 1928 xi 403

The author states that radium irradiation is especially suitable for the treatment of carcinoma of the cervix and that surgery should be limited to the early stages of the condition. A cure is obtained by radium irradiation in 43 per cent of the cases and by radical operation in 30 per cent, but there is great difference in the primary mortality of the two procedures.

In discussing the prevention of carcinoma of the cervix Gelpi emphasizes the importance of correcting lacerations, endocervicitis, metaplasia and erosions.

ROLAND S CROW MD

## ADNEXAL AND PERIUTERINE CONDITIONS

Orth O. Intra Abdominal Bilateral Ovarian Hemorrhages (Intra abdominale beiderseitige Ovarialblutungen). *Zentralbl f Chir* 1928 lv 1612

To the small number of cases of ovarian hemorrhage following appendectomy that have been reported in the literature Orth adds a case of his own. The patient was a woman twenty five years of age with an empyema of the appendix which at the time of operation was just about to rupture. During the night of the fourth day after the operation there occurred a uterine hemorrhage which was believed to be menstruation. On the following day however there was a striking and rapidly increasing anemia. At a second laparotomy 15 liters of blood were found in the peritoneal cavity. The source of the bleeding was a ruptured follicle of the right ovary.

After the second laparotomy the patient's condition improved but twenty four hours later another

marked, in view of the extensive pathological changes and the consequent radical surgery that is necessary in the cases of colored women. It indicates quite conclusively that the colored woman has a greater resistance to trauma and infection than the white woman.

A greater frequency of chaneroid and condyloma is to be expected among colored women. Vaginitis on the other hand is decidedly less frequent than among the whites.

From a third to a half of all colored women over fifty years of age have fibroids. Submucous fibroids adenomyomata and endometriomata are less frequent than the other varieties. In from 80 to 90 per cent of the cases the tumor can be palpated abdominally without difficulty. More striking than the size and multiplicity of the growths however is the uniformity with which colored women seem to ignore the existence of the tumors. The enormous tumors sometimes have veins as large as snakes coursing over their surface. Rupture of such veins is a rare complication but the author has seen two cases in which it occurred. Total hysterectomy is not an infrequent operation because infection of the cervix is common.

Carcinoma of the uterus is rather more frequent in colored women than in white women. Operation is performed in certainly not more than a per cent and in an appalling number of cases only palliative treatment is possible. The colored patients exhibit an unusually high incidence of ugly complications especially fistulae.

Carcinoma of the breast is likewise more frequent among colored women though the mortality which the author believes is mainly surgical is considerably less.

Obstetrical injuries with the single exception of fistulae are decidedly less frequent in colored women than in white women as would be expected in a race which bears its children largely without mechanical aid. Since salpingitis is an accepted cause of ectopic pregnancy one would expect the latter condition to be considerably more frequent in colored women whereas it is slightly less frequent.

The incidence of abortion and premature labor in colored women is considerably higher than in the hospital records indicate. The incidence of stillbirth is 3 per cent higher than among white women this fact being due to syphilis. The mortality among premature babies is also higher among negroes.

Eclampsia is 15 per cent more frequent in colored women and its mortality rate is 11 per cent higher than in white women. Hyperemesis is less frequent but the mortality rate is only 2.5 per cent less than among white women.

Why placenta previa should be more frequent among white women than among colored women it is impossible to say though the markedly higher mortality in colored women—the difference is 22.2 per cent—is easily explained by the fact that the negro is more likely to ignore the initial hemorrhage particularly if it is not severe and therefore is more

likely to be infected prior to admission to the hospital.

Chronic and acute appendicitis are both several times more frequent in the white race but their mortality in the colored race is considerably higher. In the colored race gall bladder disease is less frequent and gall stones are decidedly rare. Nephrolithiasis is also infrequent among negroes.

E. L. CORNELL, M.D.

#### Ward G. G. The Treatment of Pelvic Infections *Pennsylvania M J 1928 xxxii 63*

Ward states that in 15 per cent of cases of acute infection of the pelvic organs due to gonorrhoea or following labor or abortion recovery will result without treatment. The gonococcus is responsible for about 75 per cent of pelvic infections and in 70 per cent of such cases the infection in the tubes will ultimately become sterile. The operative mortality is much higher in cases in which operation is performed while the tubal infection is still active than in those in which it is performed after the infection has subsided. The greater the length of time devoted to pre-operative convalescence the greater the chance of performing a conservative and reconstructive operation rather than a radical and destructive operation.

Parametritic exudate following labor or abortion and perimetritis will often resolve without abscess formation if let alone. If pus forms it may be absorbed—frequently with preservation of function of the pelvic organs—if the quantity is small. The formation of exudates is often due to too ready resort to curettage or other intra uterine manipulations at the onset of a uterine infection. Many cases of pelvic infection are operated upon unnecessarily or too early the result being that the infection is increased or disseminated. ROLAND S. CROX, M.D.

#### Glute II M. Cystocoele at Middle Age Treated by the Interposition Operation. *New England J Med 1918 cxcix 994*

The author reports sixty three cases of cystocoele and uterine prolapse treated by the Watkins interposition operation with satisfactory results in 90.56 per cent of the patients traced. In two cases the results were unsatisfactory. In another instance the pathological report on the uterine scrapings five days after the operation revealed carcinoma of the fundus and a complete abdominal hysterectomy was performed after vaginal freeing of the uterus. There were two deaths a mortality of 3.17 per cent. One death was due to pulmonary embolism which developed on the fifteenth day after the operation while the patient was on her way home from the hospital. The other occurred on the sixth day after the operation from peritonitis probably originating in the endometrium which was exposed by partial hysterectomy preceding the interposition operation.

The chief complaint in the two cases of unsatisfactory results and in the eighteen cases with satisfactory but imperfect results was persistence of the

the hormone from the urine is during the first eight weeks of pregnancy but at any time it is easier to isolate the hormone from the urine than from the pituitary itself or from the placenta.

The urine acidified slightly with acetic acid is concentrated to about half its volume *in vacuo* at a temperature of 40 degrees C and then filtered with ether for the removal of the ovarian hormone which is more soluble in ether than the pituitary hormone. The portion of the material which is not dissolved in ether is then subjected to dialysis as the hormone dialyzes more rapidly than the other urinary constituents. As soon as the urinary pigment no longer dialyzes the dialysis is stopped the dialyzed fluid is again evaporated to dryness *in vacuo* at a low temperature the residue is further cleansed by repeated shaking out with ether and the remaining yellowish white powder is used in solution.

In contrast to the ovarian hormone the hormone of the anterior lobe of the pituitary gland is not thermostable being injured even by a temperature of 60 degrees. It is markedly sensitive to strong acids and alkalis and is insoluble in lipid soluble media. For the purpose of standardization it is well always to use from six to eight animals at the same time. If the effectiveness of the pituitary hormone is not evidenced macroscopically by bleeding points and corpora lutea the ovaries must be subjected to serial section for possible evidence of atretic follicles etc.

Up to the present time the authors have been unable by injection of the hormone to achieve rupture of the ripened follicles such as occurs after the implantation of fresh pituitary glands. Otherwise their findings in juvenile normal animals after the injection of 1 unit were the same as after implantation while in ovariectomized juvenile animals there was no effect. After continued injection into intact juvenile animals oestrus and growth of the uterus resulted but not a permanent oestrus such as follows the continued injection of folliculin. After copulation the appearance of the mucous membranes was similar to that of pregnancy with polyoid growth oedema and abundant formation of mitoses in the epithelia. The simultaneous injection of folliculin led to permanent oestrus. In adult mice continued injection caused an almost monstrous enlargement of the ovaries permanent oestrus and marked fat formation in the luteinized ovarian tissue. In sexually matured animals no longer showing oestrus oestrus could be induced again with the sex hormone as in the Steinach experiments—the animal could be rejuvenated. In future experiments attempts will be made to determine whether maturation of the follicles can be produced in the pregnant animal by injection of pituitary hormones as by the implantation of fresh anterior pituitary lobe.

In male animals but only after the injection of 3 or 4 units for several days marked enlargement of the epididymus slight enlargement of the testis and cock's comb like distention of the seminal vesicles

resulted. In castrated males no such effect was seen. In these experiments also anterior pituitary hormone proved to be the more important factor.

FLESCH (G)

Drips D G and Ford F A. Irradiation of the Ovaries and Hypophysis in Disturbances of Menstruation. *J Am M Ass* 1925 vol. 1358

The continued study of a group of cases of primary oligomenorrhea and amenorrhea and of menorrhagia and metrorrhagia has confirmed the impression that in both conditions there is an essential ovarian hypo-activity.

The occurrence of spontaneous remissions and the variable results of all forms of treatment add difficulty to the evaluation of a new method.

Low dosage irradiation of the ovaries or hypophysis offers an additional therapeutic measure in intractable cases. In those in which it has been used it has given a comparatively high percentage of favorable results in view of the severity of symptoms and regulation when attained has continued over a relatively long period.

In experimental studies which are still incomplete an attempt was made to gauge amounts of roentgen rays for application to the ovaries of white rats which might be comparable to low-dosage irradiation in the human being. Certain immediate variations in the oestral cycle without disturbance of late regularity were obtained. In most instances fertility was not affected. The second and third generations of the irradiated rats were normal. It was not possible to demonstrate precocious sexual development of immature rats by irradiation of the hypophysis with varying amounts of roentgen rays.

Miller C J. A Comparative Study of Certain Gynecological and Obstetrical Conditions as Exhibited in the Colored and White Races. *Am J Obst & Gynec* 1928 xvi 662

The negro race does not adapt itself well to the strain of city life. Under urban conditions its natural fecundity is slowly decreasing and in the last quarter of a century its birth rate which was formerly far in advance of the white birth rate was about 40 per 1000 less than that of the whites.

According to the statistics of the Charity Hospital of Louisiana pelvic disease is about twice as frequent in colored women as in white women, and in probably 90 per cent of the cases in colored women the disease is of specific origin largely because of the high incidence of gonorrhea in colored males and the frequency of promiscuous sex relations in the colored race. In colored women infections of the lower genital tract seldom remain local and tend to be more severe than in white women because colored women do not seek relief until they are forced into the hospital by pain and incapacity. Obviously operation must be done in the great majority of cases probably 90 per cent. The fact that the colored mortality rate is only 0.9 per cent higher than the white mortality rate is rather re-

# OBSTETRICS

## PREGNANCY AND ITS COMPLICATIONS

Lundwall A. The Reaction of the Body in Pregnancy (Ueber die Reaktionslage des Körpers in der Schwangerschaft) *Arch f Gynaek* 1928 CIVUV 158

This article begins with a general consideration of the development of the concept of disease from the theory of an anatomicohistological individual predisposition to recognition of the functional reaction capacity of the organism. The synthesis of this development represents the normal as well as the diseased organism as a morphologicofunctional unit. This conception is applicable also to obstetrics and gynecology especially to the changes which are brought about in the body during pregnancy. The previously accepted theory of the action of a toxin in the pregnant organism is no longer tenable since we have learned how the organism reacts during pregnancy. The difference in the reaction is the expression of a difference in sensitivity and functional response of the cellular apparatus to toxic substances thus constituting the reaction capacity of the body in relation to function and demand.

The resistance of the organism is dependent upon the condition of the mesenchyme the so called reticulo-endothelial metabolic system. Upon the latter depends the general bodily reaction capacity, i.e. the constitutionally caused and conditionally modifiable type degree and rapidity of reaction. This system is not a rigid anatomical structure but essentially a functional structure with great adaptability and power to change a fact which explains the extreme importance of the mesenchymal cells in all defensive and adaptive processes. The importance of these cells is manifested experimentally in the nature of the storage processes and the degree and rapidity of the effects of storage, i.e. the intensity of the cellular reaction to stimulation. An insight into the reaction capacity of the pregnant organism can therefore be obtained by determining how the reticulo endothelial system reacts to similar stimuli. Previous investigations along this line were carried out chiefly from the morphological viewpoint. In this article the author reports studies of the capacity of pregnant and non pregnant women to store ferri oxidatum saccharatum.

Numerous experiments regarding tissue storage which were carried out by I feiffer with saccharated iron on animals showed great differences in the tissue storage depending upon the manner in which the solution was prepared and the manner in which it was introduced. It is necessary however to use a method which is independent of the products of metabolism and of the blood katabolites since increased metabolism requires a different evaluation.

The investigations show a distinct difference in the storage capacity of pregnant and non pregnant organisms as well as a marked increase in the reaction capacity during pregnancy.

In the author's experiments which were carried out on fasting women 10 c cm of blood were removed and then with the needle still in place 50 c cm of a 4 per cent solution of ferri oxidatum saccharatum were injected. Four minutes and sixty minutes after the injection blood was withdrawn from the arm and centrifugalized in paraffined tubes. The hæmoglobin free serum thus obtained was then tested for iron. The iron content was determined by a microchemical method developed by the author in collaboration with Zechner.

Twenty women were used for the experiments—seven non pregnant women in the intermenstrual period eleven normal pregnant women in the ninth or tenth month of pregnancy one normal woman in the second month of pregnancy and one woman suffering from hyperemesis in the fifth month.

After the injection the non pregnant women showed a more marked increase in the quantity of iron than the women in advanced pregnancy. On the other hand the woman in the second month of pregnancy showed a value between that of the women in advanced pregnancy and that of the non pregnant women. Likewise the woman with hyperemesis in the fifth month of pregnancy had a higher value than the non pregnant women. Even when an increase of about 25 per cent in the blood volume during pregnancy is taken into account the iron values of the non pregnant women were about 12 per cent higher than those of the pregnant women. Accordingly the storage capacity of the pregnant organism for electronegative colloids is considerably increased.

While the storage test alone is of importance it demonstrates only partial function of the reticulo endothelial apparatus—for example the storage capacity may be normal but the other cell function may be reduced (Schuettenhelm Aschoff). The Kaufmann test of the local reaction capacity of the cells of the blood vessel walls and the subcutaneous connective tissue is necessary for conclusions regarding the condition of the organism as a whole. This test depends upon a qualitative study of an exudate of the skin brought about by the use of a cantharides plaster. From the percentage composition of the cell picture conclusions may be drawn regarding the finer reactive processes in the tissues. The character of the exudate cells is indicative not of the type of the disease but of the immunobiological strength of the organism and therefore of its reaction capacity.

The author's investigations with this test made on eighty five women yielded the following results

bladder symptoms. From these and similar cases reported by others the author concludes that all women with marked prolapse should be subjected to a urological examination and if infection is found should be treated for that condition before and after the operation.

In Clute's opinion the Watkins interposition operation is the safest and best procedure for uterine prolapse and cystocele. It is of value particularly in the cases of obese women and as it can be performed under spinal analgesia in those of women suffering from asthma or bronchitis. When the patient has not reached the menopause she should be sterilized. Partial amputation of the uterus with interposition of the remaining portion is dangerous on account of the possibility of infection. If the cervix is hypertrophied and elongated it should be amputated before the interposition. In all cases a perineorrhaphy should be done to provide adequate perineal support.

E. L. KING, M.D.

**Fruhinsholz, A.** The Indications for Operation in Cases of Lutein Cysts Associated with Hydatiform Mole (*A propos des indications opératoires liées à l'existence des kystes lutéiniques coïncidant avec une mole hydatiforme*). *Gynec et obst* 1928 XVIII 193.

There is a difference of opinion as to the significance of lutein cysts associated with hydatiform mole and their effect on the prognosis of the latter condition. The author reports two cases which bear upon these questions.

The first case was that of a woman twenty-four years of age who was under observation for a year and was subjected to repeated thorough examinations. The induction of abortion was necessitated by the hydatiform mole. A large lutein cyst was found in each ovary. One cyst was the size of the head of a fetus. The cysts persisted in spite of subinvolution of the uterus but retrogressed when complete involution followed exploratory curettage.

The second case was that of a woman twenty-five years of age in whom lutein cysts of both ovaries developed without a macroscopic mole evident from a macroscopic mole. Curettage was followed as in the first case by involution of the uterus and retrogression of the cysts.

The author concludes that it is not necessary to operate in every case of mole associated with large cysts even when the cysts persist two and a half months after expulsion of the mole or even when there is a suspicious uterine discharge. The discharge may be caused by subinvolution or secondary infection and uterine involution with retrogression of the cysts may be brought about by late curettage. When bilateral ovarian cysts are associated with enlargement of the uterus and menstrual disturbances in the absence of a demonstrable mole a microscopic mole may be present. In such cases operation should not be performed except as an emergency measure until it has been determined whether an exploratory curettage will bring about involution of the uterus and retrogression of the cysts.

ANDREW G. MONROE, M.D.

With a considerable increase of colloid lability there are usually found both a relatively low blood cholesterol value and a considerable delay in the elimination of the dyes. Ehrlich's aldehyde reaction in the serum is almost regularly positive in both normal and pathological pregnancy; it probably indicates only a colloidal transformation in the blood milieu in pregnancy and does not justify the assumption that the positive reaction is specific for the presence of urobilinogen.

The authors conclude that the almost regular demonstration of urobilin in the serum and urine during pregnancy, together with an increase in the bilirubin value and the frequent appearance of urobilinogen in the urine is evidence that during pregnancy the function of the liver differs from the normal.

Boca (Z)

Schoenig A. Estimations of Calcium in the Blood Serum of Mother and Child (Kalkbestimmungen im Plutserum von Mutter und Kind). *Monatsschr f Geburtsh u Gynaek* 1928 lxxviii 32

The investigations reported in this article were carried out according to the technique of de Waard with which the author found the calcium content of the blood serum of normal non pregnant women to be from 10.5 to 11.5 mgm per 100 ccm of blood serum.

Sixty women were examined most of whom were in the ninth or tenth month of pregnancy. The values ranged from 7.10 to 11.15 mgm and averaged 9.35 mgm per 100 ccm of blood serum. The same values were found in two women in the sixth and seventh months of pregnancy.

The author rejects the theory that this lowering of the calcium content of the blood is due to a transference of calcium to the fetus. In support of his opinion he cites the work of Wehefritz, Kehrer and Schmitz. He believes it improbable that the daily slight loss of calcium by the mother to the fetus is not replaced by the calcium ingested with the food. Moreover he calls attention to the fact that on the sixth and seventh days of the puerperium—at a time when calcium is lost as the result of lactation and drainage of the lochia—the blood calcium values correspond with those of the non pregnant state or are even higher. The cause of the diminution in the blood calcium ceases to be effective at the moment of delivery. Therefore if the transference of calcium to the fetus is not the causative factor the secondary changes in the maternal organism produced by the pregnancy must be responsible. The cause may be in the calcium-excreting organs (intestines and kidneys) and the calcium regulating organs (endocrine glands and vegetative system). The literature shows that it is not a loss of calcium that diminishes the calcium content of the blood but displacement of the calcium due to the tissue and metabolic changes in the mother produced by the fetus. Attention is called to the decrease in the blood calcium in edema due to cardiac insufficiency and after injections of adrenalin.

According to the author's theory of the regulation of calcium metabolism the pituitary which hyperfunctionates during pregnancy exerts through its pedicle a direct effect on the centers of the vegetative nervous system in the midbrain (Beidl, Mayer, Trendelenburg) in the sense of increased stimulation of the sympathetic nerve. The parathyroid glands are influenced by way of the nerves and retention of calcium results.

In simultaneous examinations of the maternal and infantile blood the author found regularly higher blood calcium values in the infant. In the infants the average value was 1.56 mgm per 100 ccm of blood and the highest and the lowest values were 1.40 and 1.12 mgm per 100 ccm. The maternal and infantile concentration of calcium showed no definite relationship to each other. Especially the placenta maintained the differences in the concentration. Therefore the theory of a free exchange of the salts through the placenta according to the laws of osmosis must be rejected. In this connection the investigations of von Oettingen are cited.

The author was surprised to find that the blood of the mothers of boys showed higher values of calcium than that of the mothers of girls (namely 9.42 mgm as against 9.07 mgm per 100 ccm). *Uniparae* and *multiparae* also showed a difference the value in the former being 9.25 mgm and the value in the latter 9.71 mgm per 100 ccm. According to the author this indicates an adaptation in *uniparae* to the repeated demands of pregnancy. Boca (G)

Sserdjukoff M. and Morosova A. The Calcium Content of the Blood at Different Stages of Pregnancy and in Toxicoses and Puerperal Diseases (Der Calciumgehalt des Blutes bei verschiedenen Perioden der Schwangerschaft Toxikosen und Nachgeburtskrankungen). *Monatsschr f Geburtsh u Gynaek* 1928 lxxviii 237

This article begins with a historical review of the literature on investigations of the calcium content of the blood of pregnant women and the rôle to be ascribed to the calcium in the organism as regards the nerve muscle system. The calcium regulates the alkali acid balance in the body and also the colloidal balance of the body albumin which influences the stability, tumescence and dispersion of the protoplasmic cells and thereby the vital functions of these cells.

The authors own investigations included 216 cases totaling 321 examinations with the micro method of Pincussen a modification of the Kramer-Tisdall method. The calcium values found expressed in milligrams per 100 ccm were as follows:

	Lowest	High	Average
Healthy non pregnant females	9.00	13.7	11.25
First half of pregnancy	9.44	13.0	11.18
Second half of pregnancy	9.74	13.5	11.46
During labor	9.06	11.5	10.73
Puerperium	9.50	12.5	11.02



In the cases of non pregnant women the average number of monocytes constituted 3.8 per cent of all cell forms found whereas in normal pregnant women the percentage varied from 7.5 to 18. During labor it sank to 4.3 and in the third week of the puerperium reached the normal value of 3.1. While more or less marked variations were noted in the individual curves in these cases in the cases of hyperemesis an elastic rebound of the monocyte curve after a sudden rise—for example from 17 to 32 per cent—was noted more frequently. In two cases of eclampsia and one severe case of hyperemesis there was no skin reaction or vesicle formation. From these observations the conclusion may be drawn that on the one hand there is a marked elasticity in the reaction adaptability of the organism and on the other hand the reaction capacity of the organism is better the stronger the reaction of the reticulo-endothelial system.

The increase of function in pregnancy consists not only in an increase in the absorption capacity of the individual cells but also in an active new formation of cells whereby otherwise quiescent storage areas become activated. The increased reactivity and permanent hypertrophy particularly of the parenchymatous organs during pregnancy can be explained only by the adaptation and new formation of cells. As long as the organism is unable to provide cells which are adapted to specific function its metabolic and defensive powers will be weak. This explains why primigravidae especially in the early stages of pregnancy frequently suffer severe disturbances and toxemias while multigravidae have a sort of immunity derived from previous pregnancies. This was evident from Benda's tests of the reaction capacity of primigravidae. The greater incidence of pathological conditions in primigravidae is due not to their youth but to the fact that it is their first pregnancy.

The theory of insufficiency of the metabolic and excretory organs in normal pregnant women is based upon faulty conclusions from incorrectly studied material. In a similar manner it may be explained why interruption of pregnancy during the course of an infection is seldom beneficial and frequently harmful since by the infection there is brought about a sort of blocking of the temporary functional reserve power.

The development of eclampsia and all other toxemias of pregnancy must be considered from the same point of view. The theory of a single cause for eclampsia is based on the fact that organs that are impaired (for example the kidneys and the liver) always show signs of insufficiency under demands made upon them by the fetus although the beginning of the eclampsia is not to be found in these impaired organs. There is no organ that is constantly affected in the same way by eclampsia; it shows changes characteristic of eclampsia. Accordingly eclampsia is the manifestation of a relative overtaxation of the metabolic and circulatory organs and not of the formation of a toxin by the fetus.

The fact that it is not the fetus but the reaction capacity of the pregnant woman that is responsible for the development of toxemias is proved by the occurrence of eclampsia during the puerperium. Therefore the treatment should not be the removal of the fetus and placenta but prophylactic dietary measures or when the eclampsia has already developed measures to relieve the overburdened organism (removal of blood laden with metabolites) and measures for immunization (the administration of serum from cured eclamptics) etc. In this manner are best met the requirements for stimulation and strengthening of the reticulo-endothelial function.

SIEGERT (G)

Eufinger H. and Bader C. W. The Function of the Liver in Pregnancy. I. Storage of Dye stuffs in Pregnancy. (Die Leberfunktion in der Schwangerschaft. I. Die Farbstoffspeicherung in der Schwangerschaft.) *Arch f. Gynak.* 1935, cxviii, 730.

All methods of studying the reticulo-endothelial system confirm Rubbert's demonstration of a peculiar capacity of certain mesenchymal cells to store dyes. The first to undertake a large series of experiments with regard to the reticulo-endothelial system in human pregnancy was Benda. With the Congo-red method (Lundvall) obtained results diametrically opposed to those of Benda. Naujoks found in the toxemias of pregnancy a distinct retardation of the storage of dyes.

The lack of agreement in the results obtained by these investigators led the authors to undertake researches of their own in which they followed carefully the method of Reimann and Adler in securing from 12 to 24 c. cm. of a 1 per cent solution of Congo red intravenously. In each case they estimated simultaneously the bilirubin content of the blood by the van den Bergh method, carried out Ehrlich's aldehyde test in the serum and urine and determined the urobilin in the serum and urine by the fluorescent test with Schlesinger's reagent. A total of 100 healthy pregnant women were examined and in addition a large number of women with toxemias. The findings show that in the early stage of pregnancy the speed of elimination is approximately normal. Beginning with the sixth month there is a distinct progressively increasing retardation relative as well as absolute in the storage process which reaches its maximum in the last month of pregnancy and during parturition. In the first days of the puerperium the storage speed returns to its original rate.

Of the cases of toxemias of pregnancy those of hyperemesis and icterus of pregnancy were distinguished by an especially marked delay in elimination. In nephropathy and eclampsia the results were inconstant.

The process of elimination of dyes is not dependent solely on the state of the reticulo-endothelial system but is influenced to a large degree by the physicochemical structure of the reaction milieu.

tineal line. It was somewhat flattened but otherwise was normal even being surrounded by abundant perineal fat. The vessels were engorged and some of them seemed directed to the origin of the common iliac artery. Recovery was uneventful.

This anomaly has been observed several times. In most cases it has had no effect on the pregnancy but in some instances it has caused abortion. In one case reported nephrectomy was necessary on account of hydronephrosis.

In fourteen cases reported the kidney interfered with labor. In ten the labor was terminated without accident. In the four others it was terminated respectively by nephrectomy by the vaginal route, rupture of the uterus, embryotomy and cesarean section.

After considering all of the methods proposed for dealing with this condition (transplantation of the kidney, premature induction of labor, symphysiotomy) the author concludes that the best procedure is cervical cesarean section.

ALBERT F. DE GROOT, M.D.

Pickles W. and Jones S. S. Regional Anæsthesia in Obstetrics. *New England J. Med.* 1928 cxix 938.

The authors describe the neuro anatomy of the region of the sacral nerve, review the literature on sacral nerve block and describe the various methods by which this type of anæsthesia is induced. They have adopted the epidural method and report twenty-eight deliveries in which it was employed.

The injection is made through the sacral hiatus which is bounded laterally by the sacral cornua and above by the fourth sacral spine and is covered by the sacrococcygeal membrane. After anæsthetization of the superficial tissues an unbreakable spinal needle is introduced through the membrane and advanced until it touches the anterior wall of the sacral canal when it is slightly withdrawn its direction is changed to accord with that of the sacral canal and it is then advanced 3 or 4 cm. After withdrawal of the stylet aspiration is done and if blood or spinal fluid is obtained the needle is withdrawn slightly until no such flow occurs. When it has been definitely ascertained that the point of the needle is not in the dural sac or in a vein 40 c.c. of a 1 per cent solution of procain without adrenalin are slowly injected. Anæsthesia is usually complete in from ten to fifteen minutes and lasts about two hours.

Of the twenty-eight patients whose cases are reviewed twenty six were primiparae. Anæsthesia was complete in twenty six. In one case the needle failed to enter the canal and in another a bony deformity made the injection difficult and only partial anæsthesia of one and one half hours duration was obtained. In five cases the labor outlasted the anæsthesia. The average duration of spontaneous labors was forty nine minutes. The extremes were nineteen and ninety minutes. In the cases of primiparae the injection was generally given when the os

was fully dilated and in those of multiparae when there was a dilatation of 6 or 7 cm. Most of the patients required continual urging to persuade them to use their abdominal muscles. There was no untoward reaction of importance and no increased tendency toward postpartum hæmorrhage.

The chief disadvantage of the method is the fairly short duration of the anæsthesia. Procain poisoning did not occur in any of the cases reviewed. The authors attribute such poisoning to injection of the procain into a vein.

The chief indication for the method is a condition contra indicating general anæsthesia such as toxæmia or a heart lesion. The method should not be used if the patient is irrational or non cooperative or there is an infectious process near the proposed site of injection.

E. L. KING, M.D.

Pitkin G. P. and McCormack F. C. Controllable Spinal Anæsthesia in Obstetrics. *Surg. Gynec. & Obst.* 1928 xlvii 713.

The authors review eighty nine cases of delivery under controllable spinal anæsthesia.

Gladin (the mucilaginous content of wheat starch) is injected with the anæsthetic solution to prevent mixing of the latter with the spinal fluid before it has been absorbed. When a small amount of solution is injected into the subarachnoid space it is confined to the lower portion of the spinal canal and anæsthetizes only the sacral nerves with resulting anæsthesia of the perineum, the inner side of the thighs for 5 or 6 in. and the region from the symphysis in front to the lower part of the sacrum in the rear. The cervix, vagina and vulva and the sphincters of the anus and bladder are completely anæsthetized while sensation of the uterus is not impaired.

The gladin lessens the toxin symptoms of the novocain. If too much gladin is used in the solution the induction of anæsthesia fails or is greatly delayed whereas if too little is used the anæsthesia cannot be controlled.

The patient is placed on her right side and the head of the delivery table is raised from 15 to 20 degrees. She is never allowed to lie entirely flat or in the Trendelenburg position as in these positions the heavy solution may ascend high in the canal producing a drop in the blood pressure, nausea, vomiting and headache.

After the skin and the interspinous ligament have been injected with a solution of novocain (0.013) ephedrine (0.5) and normal salt solution (q.s. 13) the puncture is made between the fourth and fifth lumbar vertebrae with a No. 22 gauge lumbar puncture needle with a short bevel of 45 degrees.

When clear spinal fluid starts to come away a syringe is attached to the needle and a solution of novocain (0.2) gladin solution (0.13) strychnine sulphate (0.0022) glucose (0.065) and normal salt solution (q.s. 0.5) is injected. On withdrawal of the needle the wound is covered and the patient turned on her back. Anæsthesia results in from ten to

During lactation there seemed to be a tendency toward a decrease in the values.

Like all previous investigators the authors found that the calcium content in the blood from the umbilical cord is greater than that in the maternal blood ranging from 10.8 to 18 mgm and averaging 13.54 mgm per 100 c.c.m. In the amniotic fluid the values ranged from 5.56 to 9.44 mgm and averaged 7.37 mgm per 100 c.c.m. The values always remained the same in the same woman before and after labor and in the first half of the puerperal period. In contrast to practically all previous investigators the authors noted no decrease of the calcium in the blood in toxemias of pregnancy (except in chorea in the second half of pregnancy in which the value was 10.2 mgm per 100 c.c.m.). Even in eclampsia they found uniform hypocalcemia. Only in isolated cases did they see a reduction in the calcium content and this showed no relationship to the number of the attacks or the severity of the disease. Only in the nephropathy of pregnancy was there a regular diminution of the calcium from the normal the average value being 8.44 mgm per 100 c.c.m. and in these cases eclampsia did not develop. In local diseases of the puerperium of slight severity the calcium values remained about the same or showed only a slight reduction. Severe diseases of a septic or pyemic nature were associated with a marked diminution of the calcium content of the serum to as low as 9.45 mgm per 100 c.c.m.

As a result of their investigations the authors conclude that the calcium balance during pregnancy and in the toxemias of pregnancy has no decisive significance.

BOCK, G.

Davidson A. M. The Use of Morphine in Eclampsia. *Med J Austral* 1925 11 612

Davidson states that the great diversity of opinion among the leading obstetricians regarding the use of morphine in eclampsia is to be expected inasmuch as the etiology of eclampsia is still unknown. There is as yet no absolute proof of any of the many etiological theories advanced. It is possible that eclampsia is due to the excessive production of a normal hormone of pregnancy the function of which is to soften the genital tract to facilitate delivery. Excess of such a hormone acting upon tissues other than those for which it is intended would cause edema and a further excess would interfere with kidney function and ultimately irritate the central nervous system causing convulsions cyanosis and death. The source of this toxic hormone is believed to be the placenta. As yet no method is known by which the formation of the hormone may be prevented. It is believed that any factor which increases the metabolic rate of the mother will increase the output of the toxin and that conversely any factor which will decrease the metabolic rate of the mother will limit the output of the toxin.

There is little in the literature regarding the effect of morphine upon metabolism and very little infor-

mation regarding the normal changes in the metabolic rate due to pregnancy. Stander has shown experimentally that in normal animals morphine increases the carbon-dioxide combining power of the blood. Accordingly morphine tends to counteract acidosis. Cushny and Clark have shown that morphine has no effect upon kidney function except when it is given in enormous doses but causes a slowing of peristalsis. The resulting interference with elimination may be overcome by lavage of the stomach and colon as recommended by Fitzgibbon.

Titus and others have shown that the convulsions of eclampsia are preceded by a sudden drop in the blood sugar. Therefore the use of morphine to prevent convulsions seems justified since in this manner the violent muscular activity which will further diminish the glycogen reserve in the liver and increase the katabolic products in the blood will be prevented. Cushny states that morphine lowers the respiratory rate causing a loss of glycogen which would appear a contra indication to its use but the convulsions themselves may impede respiration sufficiently to cause asphyxia and seldom is enough morphine given to alter the respiratory rate seriously.

The conclusion may therefore be drawn that provided lavage is carried out there is no contraindication to the use of morphine in the convulsive stages of eclampsia as the delay of elimination by kidney function is much less than was formerly believed. Morphine is of inestimable value in reducing muscular effort in quieting the mind of the patient, and in tending to prevent the numerous secondary effects of the convulsions.

SAMUEL J. FOGELSON, M.D.

## LABOR AND ITS COMPLICATIONS

Ramos A. P. Congenital Ectopic Kidney as a Tumor Prævia in Labor (La dystopie rénale congénitale comme tumeur prævia dans l'accouchement). *Gynéc et Obst* 1923 xviii 97

In the course of the routine examination of a primipara in the eighth month of pregnancy the cervix was found deviated to the right side of the pelvis. The presenting head was high in the pelvis and displaced to the right. In the left vaginal cul de sac a flattened tumor the size of a mandarin orange could be felt on the posterior wall of the pelvis below the promontory. Slight mobility suggested that the tumor had a short pedicle.

Several diagnoses were considered the last one being ectopic kidney. Cystoscopy revealed nothing abnormal but on catheterization of the ureters the left ureter was found very short about 10 cm in length. The function of both kidneys was normal. Iyelography demonstrated clearly an ectopic kidney lodged in the superior strait.

The treatment was expectant but when labor began it soon became evident that the tumor would continue to obstruct the birth canal. The patient was therefore delivered by cervical cesarean section. The kidney was found to embrace the left iliopect

# GENITO-URINARY SURGERY

## ADRENAL KIDNEY AND URETER

Wesson M B *Pyelography California & West Med* 1928 xiv 297

Ten years ago pyelography was considered a dangerous surgical procedure. Today because of the harmlessness of the reagents used and the successful sales talk of cystoscope salesmen many general practitioners make their own pyelographic examinations.

Pyelography is ordinarily a simple procedure, but cystoscopy is not. Complete anuria and death may follow urethral instrumentation.

The use of warm or hot water as an irrigating medium causes fogging of the lens and softens the catheters. As the bladder is relatively insensitive to cold water the irrigating solution should never be above room temperature.

Catheters are ruined by sterilization by being stored in a container connected with a receptacle of formaldehyde by boiling and by prolonged soaking in bichloride of mercury solution.

Twelve per cent sodium iodide has been found to be a harmless and satisfactory pyelographic medium. The use of 15 to 25 per cent sodium bromide as a pyelographic medium is associated with danger and discomfort.

Double pyelograms are necessary in order that the two kidneys may be compared. Bilateral bizarre shapes are congenital, but a unilateral bizarre shape indicates a pathological condition.

Double pyelograms can be made with impunity in any case in which bilateral ureteral catheterization has been done.

The injection is most satisfactorily accomplished by the gravity method with the use of two burettes held in a stand at a height of from 18 to 24 in. above the patient. When the fluid stops running the kidney pelvis is filled. The injection requires from one to five minutes.

When a syringe is used there is generally over injection which spoils the picture and causes discomfort for a few hours. This is true also when a gravity burette is held by a nervous or impatient assistant.

The author reports six cases in which a pyelographic examination was made. The first was a case of diverticula of the bladder with reflux to a left pyonephrosis. In the second there was hydro-nephrosis of the right kidney due apparently to an aberrant artery and the passage of catheters had caused anuria of the normal left kidney. In the third case a small stone was found in an uninfected non-functioning kidney and a staghorn stone in an infected functioning kidney. In the fourth case over injection resulted from 24 in. gravity pressure the solution pouring out through or between the

tubules. In the fifth case in which there was bilateral ptosis of the kidney a unilateral pyelogram led to nephropexy and four years later the kidney had resumed approximately its former position. In the sixth case there was a calcified hematoma.

LOUIS GROSS M D

Gibson A G *Pyelitis and Pyelonephritis Lancet* 1928 cctv 903

Gibson divides 114 cases in which he studied the kidneys at autopsy into two groups (1) 72 cases with no obstruction to the outflow of urine and (2) 42 cases with such obstruction. He concludes from his findings that by far the most common infection of the kidney substance in man is an infection through the blood stream. This type is found in 77 per cent of all cases of renal disease whether urinary obstruction is present or not.

From a study of the clinical records of the cases reviewed Gibson found that pyonephritis may occur (1) as mild attacks which pass without notice or perhaps with only slight discomfort (2) moderate attacks which are attributed to what is ordinarily termed acute pyelitis (3) septicemic attacks simulating typhoid or other grave conditions and (4) fulminating attacks in which the kidney may become gangrenous and death is imminent.

The type of kidney inflammation which is caused by repeated attacks of pyelonephrosis and scarring and is called atrophic pyelonephritis is not so clearly recognized by physicians as by urologists. In the author's series of cases there were eleven of this type. The condition may occur on one or both sides. The kidney is small, contracted and fibrotic. In extreme cases no kidney substance may remain.

Pyelitis is an inflammation of the inner lining of the pelvis of the kidney, is ordinarily considered a common lesion, but Gibson found that in purulent and semipurulent infections of the kidney it was very uncommon in the absence of obstruction, though it occurs in about 50 per cent of the cases when obstruction is present. Therefore he believes that many cases of so called pyelitis are cases of pyelonephritis.

Pyelitis as an anatomical lesion occurs in tuberculosis of the kidney, nephrolithiasis, gonorrhoea and all ascending infections.

The state of the urine varies considerably in pyelitis and pyelonephritis. Frequently it gives very little aid in the diagnosis and in some instances the absence of abnormality in the urine may divert attention from the kidney even when there is a localized purulent infection of that organ. This is apt to be true especially in cases of acute infarctions in the cortex.

HENRY L SANFORD M D

twelve minutes. After the injection the patient is kept on her back with her head slightly raised for from one and a half to two hours.

If anaesthesia is desired higher on the body surface it is induced by aspirating and re-injecting 2, 4 or 6 c.c.m. of the spinal fluid.

On account of the ease of introduction of the solution and the rapidity of its effects this type of anaesthesia is better than caudal or sacral anaesthesia. It has none of the complications of inhalation anaesthesia. There is no shock or drop in the blood pressure. The rigid or spastic cervix becomes soft and dilates rapidly and the perineum relaxes so that version, the application of forceps, etc. are greatly facilitated.

Controllable spinal anaesthesia is indicated in the cases of women with tuberculosis, pneumonia, asthma, emphysema, cardiac decompensation, diabetes, eclampsia, acidosis, pyelitis and severe anaemia.

PITLUF H. ARNOT, M.D.

### NEWBORN

Munro, D. Cranial and Intracranial Damage in the Newborn. *Surg. Gynec. & Obst.* 1918, XLVI, 622.

Postmortem and microscopic studies in forty-five of fifty-six primarily fatal cases of cranial and intracranial damage in the newborn showed that the most common pathological entities were meningeal and intracerebral haemorrhage, congestion and oedema.

Gross intracranial haemorrhage may occur from the rupture of large venous sinuses. The most common sites are the great vein of Galen and the lateral sinus.

Forty-eight of the fifty-eight babies which were discharged from the hospital living and released were followed up. Thirty-nine may be regarded as cured. Five are still too young to allow a satisfactory estimation of the end result.

The most common late result of cerebral damage in the newborn is hydrocephalus associated with epilepsy or idiocy. Convulsions alone and spasticity associated with idiocy have also occurred.

In the cases reviewed lumbar decompression was done after recovery from the surgical shock. In addition parental blood was given intramuscularly in the cases of haemorrhagic disease. Depressed fractures were elevated as soon as possible. Ventricular puncture and a typical subtemporal decompression were done twice.

ROLAND S. CHOW, M.D.

### MISCELLANEOUS

Hahn, M. The Treatment of Syphilitic Mothers and Children in Welfare Stations (*Fürsorgebehandlung der syphilitischen Mütter und Kinder*). *Ztschr. f. Geburtsh. u. Gynäk.* 1918, LVIII, 295, 318.

The author discusses the various measures that must be employed in welfare work for syphilitic mothers and children. In making the diagnosis in the case of the syphilitic mother, compulsion must be avoided. The aim should be a legal regulation making assistance of any kind in maternity cases dependent on the obtaining of a serological reaction. Hahn discusses the costs involved. The welfare stations for pregnant women and infants should be obliged to refer syphilitic expectant mothers and infants to suitable treatment stations. *PITLUF (G)*.

twenty four year history of hematuria which was probably due to disturbances of the renal circulation resulting from kinking or compression of the renal veins from downward dislocation of the enlarged kidney. Such hematurias are regarded as the cause of albuminous stones since hematin can be demonstrated chemically in the concretions. Around the coagula there are deposited as the result of changes in the surface tension amorphous uric acid and crystalloids of unknown form or albuminous masses including bacteria in the sense of colloid precipitation.

JASSEN (Z)

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Calculous anuria occurs under the following four conditions (r) when both ureters are blocked (2) when one ureter is blocked and the other is undeveloped or has been removed or destroyed by disease (3) when a single fused ureter draining both kidneys or a double kidney becomes blocked and (4) when one kidney is blocked and the other fails to secrete. It is most frequent in middle age and occurs more often in males than in females. The symptoms are pain and anuria followed first by dryness of the skin, nausea, sleeplessness and gaseous distention of the gastro-intestinal tract and later by drowsiness, nausea, edema of the eyelids, twitchings, convulsions and sometimes blindness.

The treatment is nephrotomy and drainage through a lumbar incision on both sides if necessary under nitrous oxide oxygen anesthesia. After this operation the condition returns to normal in two months.

BENJAMIN F ROLLER M D

Campbell M F. Ureteral Obstruction in Infancy  
*Am J Surg* 1925 v 443

Ureteral obstructions particularly congenital structures are not uncommon in children and may be the underlying cause of persistent urinary tract infection with marked destruction of the kidney. The author emphasizes the similarity of obstructive lesions of the urinary tract in children to those found in adults. By modern urological methods they can be diagnosed clinically and treated surgically. Medical measures are of value only in conjunction with surgery for relief of the obstruction.

When the obstruction is recognized and treated early the patient may be spared irreparable renal destruction and in many cases years of suffering or an early death.

C TRAYER STEVENS M D

Coffey R C. Transplantation of the Ureters into the Large Intestine. *Surg Gynec & Obst* 1929 xlvii 593

In an article of considerable length profusely illustrated the author takes up in detail the fundamental principles involved in the transplantation of the ureters into the large intestine. He then traces the chronological steps in the development of the operation and discusses the types of operation antedating his own. He defines the problem in this

work and reviews much of the experimentation which has been done in the development of a satisfactory technique. The technique of the operation as now performed is described in minute detail and the complications to be guarded against in the post-operative course are pointed out. The records of a number of cases in which the operation was performed successfully are presented.

In conclusion Coffey says that now for the first time he feels justified in recommending this operation for general use by the skilled surgeon for any condition in which it is necessary to dispense with the bladder as a reservoir for urine.

JOHN G CHIFFETHAM M D

## BLADDER, URETHRA AND PENIS

Frontz W A. Submucous Fibrosis (Localized Cystitis). *South M J* 1928 xxi 899

This article deals with the relatively uncommon form of cystitis first reported by Hunner in 1913 as elusive ulcer of the bladder. The symptoms are out of all proportion to the urinary and cystoscopic findings as the ulcer may have disappeared entirely and the process may be limited to the deeper layers of the bladder wall.

The predominant and constant symptoms are urinary frequency and pain, the former in many cases amounting almost to incontinence. The pain which is caused by distention of the bladder is suprapubic and usually severe and cutting in character. In many cases there is a history of hematuria following overdistention of the bladder and noted only during a single voiding.

A constant finding is reduction of the capacity of the bladder to between 100 and 150 c cm or less. In many cases the appearance of the vesical mucosa is so little altered that if the condition were not suspected the lesion might not be found. The area of reddening varies in diameter from a few millimeters to several centimeters. If the bladder is overdistended the formerly intact mucosa covering the lesion may be the site of bleeding fissures. When the urine is clear the fissures heal promptly. The diagnosis is rarely very difficult. It is suggested by the history of long continued urinary frequency associated with suprapubic pain on overdistention of the bladder and becomes practically certain when there is no urinary obstruction and no pathological elements can be found in the urine. The characteristic pathological change is a fibrosis of the submucosa. The mucosa rests on a dense scarrous layer instead of the normal loose areolar tissue. When the deeper bladder layers are involved the lesion is thick walled.

A cure can be obtained only by surgical extirpation of the lesion. Recurrences may develop at the original site or elsewhere in the bladder. The author employs deep fulguration under anesthesia before resorting to more radical surgical measures. Before the bladder treatment is begun all foci of infection should be eradicated.

CLAUDE D HOLMES M D

Grosbie A H Pylonephritis *North est Med*  
1928 xxvii 516

Pylonephritis in its various forms is the most common condition seen by the urologist. The term pylonephritis should include all cases of pyelitis.

Acute pylonephritis in an otherwise normal kidney tends to become cured. In cases of recurring attacks however slight a pyelographic examination should be made. If the attacks recur in kidneys that have been proved otherwise normal a search should be made for sources of infection such as devitalized teeth, infected tonsils and intestinal stasis.

Pain is not a constant nor a reliable symptom in either simple pylonephritis or pyelonephritis developing in an abnormal kidney. Pylonephritis in an abnormal kidney—that is, in the presence of stones or a kink of the ureter—may entirely destroy the kidney without causing localized pain.

In every case of pylonephritis the urinary sediment should be examined after subsidence of the symptoms. If erythrocytes, leucocytes or bacteria persist a pyelographic examination should be made. A kidney rarely becomes destroyed without the appearance of evidence of its destruction in the urinary sediment. C TRAVERS STEPHEN M D

Rudnick D F Bilateral Renal Tuberculosis  
End Stage with Sclerosis and Calcification  
*J Urol* 1928 xx 625

Four types of renal tuberculosis can be differentiated: (1) tuberculosis of the kidney without X-ray signs; (2) chronic ulcerative tuberculosis of the kidney (pelvis, calyces and ureter); (3) cement kidney (Moeletnure) and (4) calcified tuberculosis of the kidney.

In the first type the urine usually shows tubercle bacilli long before the X-ray findings become positive and there may be extensive destruction of the kidney parenchyma before deformity of the pelvis or calyces can be demonstrated.

In the ulcerative type the pyelogram shows changes in the pelvis and calyces.

In the cement kidney the diseased areas are filled with caseous material in which calcium is deposited.

Calcified tuberculosis of the kidney is a healing or localized tuberculosis with calcification.

The X-ray shadows of tuberculous lesions of the kidney must be differentiated from those of: (1) calculi; (2) hydronephrosis and pyonephrosis; (3) paraneuritic abscess; (4) perinephritis; (5) cystic kidney; (6) a calcified blood clot in the pelvis; (7) a calcified aneurism of the renal artery; (8) tumors of the kidney; and (9) bilharziasis.

The author reports a case of bilateral renal tuberculosis in a man forty years of age. Five years previously the patient had developed a cough and tubercle bacilli were found in the sputum. After treatment in a sanatorium for a year the sputum became negative for tubercle bacilli. Six months after entering the sanatorium the patient began to have frequency, urgency and slight burning with occasional nocturia. The function of the left kidney

was greatly reduced; the urine from the left side contained tubercle bacilli and the pyelogram of the left kidney showed enlargement and parenchymal destruction. Shortly thereafter tubercle bacilli were found in the urine from the right kidney but the pyelogram of this kidney was normal.

The patient refused operation, left the sanatorium and went back to work. During the next few months his blood pressure rose from 170-144 to 200-140. X-ray examination of the urinary tract at the end of that time showed calcification of the left kidney and a beginning of this process in the right kidney. Cystoscopic examination showed a normal ureteral efflux from the right ureteral orifice but none from the left side.

In conclusion the author states that sclerosis with subsequent calcification of the kidneys is not an uncommon aftermath of renal tuberculosis. It usually occurs in one kidney but may be bilateral. The case reported in this article presented a characteristic clinical course. It demonstrates the necessity for flat X-ray plates in cases presenting or suggesting possible renal involvement and cases of abdominal conditions of an obscure nature particularly those with a history of operative interference without benefit. CLAUDE D HIGGINS M D

Troeltzsch J Albuminous Stones in the Renal Pelvis. An Attempt at Their Histochemical Decomposition. (Eiweiss Steine im Nierenbecken. Versuch ihres histochemischen Abbaus.) *Zurich J. urol. Chir.* 1928 xxiv 443

In the case reported in this article the clinical diagnosis was calculous pyonephrosis of the left side and hydronephrosis with stones and ureteral calculi on the right side. The development of complete anuria led to operation. A nephrostomy was done on the right side after removal of the stones but the patient died from renal insufficiency.

Autopsy revealed bilateral lithonephrosis. In the left pelvis and ureter there were ten albuminous stones and in the lower portion of the right ureter there was an oxalate stone the size of a distal pit. Associated conditions were pyonephrosis, a perirenal abscess that had ruptured into the ascending colon and suppurative diptheritic cystitis.

Only a few reports of concretions of organic structure have been made in the literature. These are cited in detail. In the author's case the concretions found in the left kidney varied in size from that of a pea to that of a cherry and in color from a yellowish brown to a grayish white. They were spherical or ovoid and of the consistency of boiled beans. In the center there was a hard firm reddish brown nucleus surrounded by soft concentrically arranged glassy layers.

The results of the chemical, histological and crystallographic examinations of the albuminous bodies and of the attempts at their histochemical decomposition must be read in the original.

In discussing the genesis of the stones in this case the author cites the fact that the patient gave a

twenty four year history of hæmatoma which was probably due to disturbances of the renal circulation resulting from kinking or compression of the renal veins from downward dislocation of the enlarged kidney. Such hæmatomas are regarded as the cause of aluminous stones since hæmatin can be demonstrated chemically in the concretions. Around the coagula there are deposited as the result of changes in the surface tension amorphous uric acid and crystalloids of unknown form or aluminous masses including bacteria in the sense of colloid precipitation.

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CLAUDE D. HOLMES M.D.



Cabot H. Stone in the Bladder. *J Am U Ass* 1928 xci 1968

In uncomplicated cases of stone in the bladder the stone may be removed by incision or litholapaxy. Litholapaxy is contra indicated when the stone is very large and the bladder is small holding less than 125 c cm. and when the nucleus of the stone is a foreign body which cannot be crushed. It may be contra indicated also when the urethra is small but as a rule a urethral structure can be divided. In borderline cases litholapaxy should be tried before the bladder is opened. BENJAMIN F. ROLLER M.D.

Hunt V. C. The Surgical Treatment of Malignant Tumors of the Bladder. *J Am U Ass* 1928 xci 1704

Ninety five per cent of malignant lesions of the bladder are epitheliomata of varying degrees of malignancy. More than half are highly malignant (grades 3 or 4) irrespective of their situation. Lesions of the base of the bladder tend to be more malignant than lesions of the lateral walls and dome. The mortality rate of surgical procedures is dependent upon the site of the tumor, the magnitude of the operation and in lesions of the base of the bladder the method of disposing of the ureter. The mortality is lowest following the excision types of operations employed in the lateral walls and dome and highest in segmental resection for tumors of the base with reimplantation of the ureter which is hardly a justifiable procedure. Division and ligation of the ureter has proved the best method when the ureter is involved in the lesion and when the operation is performed for an extensive operable tumor of the base.

A study of approximately 370 cases of epithelioma of the bladder in which curative surgical procedures were carried out indicated that the results are dependent upon the situation of the tumor, its extent and its degree of malignancy. In general irrespective of the site or situation of the tumor approximately 65 per cent of the patients with malignant lesions graded 1 or 2 are living and well three years after the operation while of those having radical operations for lesions graded 3 or 4 approximately 35 per cent obtained equally good results. When the site of the growth is taken into consideration the results of surgical treatment of tumors of the lateral walls and dome are nearly twice as good as those of the base, the degree of malignancy being equal. Approximately 73 per cent of patients with tumors of the lateral walls or dome graded 1 or 2 and 42 per cent of those with tumors graded 3 or 4 are living after three or more years while 50 per cent of patients with tumors in the base graded 1 or 2 and 25 per cent of patients with tumors graded 3 or 4 have survived without recurrence for the same length of time.

It is apparent that the merit of various surgical procedures and physical agents used in the treatment of malignant tumors of the bladder may be judged and accurate results of treatment ascertained only

if cases are analyzed in terms of pathology, the degree of the malignancy, the site of the lesion and the extent of the involvement. Not all patients can be cured but a higher percentage of good results may be obtained by surgical than by any other methods.

Davis D. M. Epispadias in Females and Its Surgical Treatment. *Surg Gynec & Obst* 1928 xlvii 682

Davis discusses the embryological origin of epispadias in the female and reviews six cases of the condition. He classifies previous methods of treatment as follows:

1. Plastic operations. (a) external plastics in which the external genitalia were restored to a condition as near normal as possible and the urethra was repaired by the excision of portions of its redundant wall upward for a variable distance but not far enough to include the sphincteric muscle of the bladder and (b) internal plastics in which the repair was carried upward to include the region of the internal sphincter, the vesical orifice and a portion of the anterior wall of the bladder. Later the chief requirement was believed to be lengthening and narrowing of the urethra located by the formation of a bend or kink in its course. While in many cases the immediate result was good, incontinence recurred a few weeks later after a subsidence of the edema and inflammatory reaction around the urethra.

2. Reefing operations. Restoration of the urethra was attempted by means of reefing sutures applied through the urethral walls. This method was not successful.

3. Muscle plastic operations. An attempt was made to supply a new sphincteric apparatus by transplanting a voluntary muscle in the form of a ring around the urethra. Good results were some times obtained.

4. Torsion of the urethra. No effort was made to bring the walls of the urethra into close apposition by freeing the urethra up to its attachment to the bladder, twisting it through an arc varying from 90 to 480 degrees and suturing it into place again at the outer end. In some cases this operation was followed by gangrene or stricture of the urethra and in many cases it failed to produce the desired result.

5. Cauterization. This was not successful.

6. Interposition of the uterus. This was done only once. The vesicovaginal fascia was shortened by a reefing procedure and the patient sterilized by resection of the tubes. There now seems no excuse for sterilizing the patient in order to cure epispadias.

Transplantation of the ureters. This procedure is unnecessarily severe and radical.

8. Obliteration of the urethra and the establishment of a suprapubic fistula. In the author's opinion this operation is not worthy of discussion.

In the method advocated by Davis a two-stage operation, the first stage is a plastic repair of the

defect including (1) wide exposure of the affected areas (2) sufficient excision of excessive mucosa under the control of vision (3) careful suture of the halves of the defective internal sphincter muscle over the anterior aspect of the newly formed vesical orifice and (4) diversion of the urine during the period of healing by a drainage tube in the bladder. The second stage which is usually unnecessary is Deming's gracilis muscle plastic operation.

GILBERT J. THOMAS M.D.

**Anderson A. E. Structure of the Female Urethra**  
*Northwest Med.* 1928 XLVII 520

The author reviews the etiology pathology symptoms and treatment of stricture of the female urethra. The condition is not rare but there is considerable difference of opinion as to its incidence. Inflammations are regarded as the chief cause. Trauma is also an important factor. A thorough urological examination should be made in all cases. The three cardinal signs of the condition are frequency urgency and dysuria. Elimination of the causative factor is necessary. Dilatation supplemented by local treatment is the only measure giving relief.

C. TRAVERS STEPTEN M.D.

### GENITAL ORGANS

**Hittis S. Pyretotherapy in the Treatment of Gonorrhea by Inducing Aseptic Abscess**  
*New England J. Med.* 1928 CCXIX 1041

The author has endeavored to cure refractory cases of gonorrhea by the production of a continuous fever. A series of eleven cases were treated by an injection of 0.5 c.c. of turpentine into the thigh which caused the formation of an aseptic abscess fever and pain. An apparently complete cure was obtained in seven cases from one day to one week after the injection. In the four other cases the results were less definite.

Hittis believes that in recent acute uncomplicated urethritis local conservative treatment is to be preferred to procedures causing a general reaction and incapacitating the patient for some time but that in cases with complications the production of an aseptic abscess is an excellent means of shortening the period of incapacity and at the same time favorably influencing the outcome of the infection.

HENRY I. SANFORD M.D.

**Young H. H. Medical and Surgical Problems in Prostatic Obstruction**  
*New England J. Med.* 1928 CCXIX 859

The active part played by the trigon in micturition explains the trigonal hypertrophy associated with median bar prostatic growths. The muscles of the trigon become hypertrophied in their effort to pull the growth down and open the internal sphincter. Prostatic hypertrophy is associated with carcinoma in 10 per cent of cases. Frequently the carcinoma is not found in the enucleated prostatic mass because there has been no invasion.

The author recommends sacral or caudal anesthesia for prostatic surgery. He injects a 3 per cent solution of procain or novocain into the epidural space introducing the needle by way of the sacral notch. He states that in the radical operation complete urinary control may be preserved by anastomosing the bladder with the stump of the urethra and preserving the nerves to the triangular ligament thus keeping the external sphincter intact. Of twenty-seven patients upon whom the radical operation was performed by Young 62 per cent were living and without recurrence five years after the operation.

In cases with congenital valves of the verumontanum associated with enlargement of the ureters and hydronephrosis the punch operation is very effective. For such cases Young uses a miniature punch. Most infants with this condition are uramic and require the same careful preoperative treatment as adults with obstruction.

The chief factor in the mortality of prostatic obstruction is infection. In the control of infection mercurochrome injected intravenously has been found very effective. Except in fulminating cases in which large doses are given 10 c.c. of a 1 per cent aqueous solution per 100 lb. of body weight are injected.

CARL R. STEINKE M.D.

**Retterer E. and Alexandescu G. The Structure of Testicular Grafts Four Years and Five Months Old (Structure de greffons testiculaires datant de quatre ans et cinq mois)**  
*J. d'urolog. med. et chir.* 1928 XLVI 113

A Russian engineer met with an aviation accident which disabled him for seven years. During the last two years he became sexually impotent. On January 6, 1924, Voronoff grafted four pieces of chimpanzee testicle into the tunica vaginalis. After this operation the patient was able to resume his work and his sexual function was reestablished. At the beginning of the fifth year his condition began to deteriorate again and on June 4, 1928, another transplantation was performed and the first grafts were removed for histological examination.

The transplanted pieces of testicle had somewhat decreased in size. Their structure was completely changed. The central part constituting the greater portion of the graft had become necrotic. The cortex had survived and had become vascularized for a depth of from 0.5 to 2 mm. but the original tissue was changed. In some of the tubes the epithelial lining had become reduced to a single layer of flattened cells. Other tubes had become cords. The latter were made up of several layers of cords arranged concentrically around the axis of the cord. The cells consisted of cytoplasm containing several nuclei (connective tissue in the first stage of development). The tubes had very fine lumina which were either totally empty or filled with detritus of epithelial cells with pyknotic nuclei. The walls of some of the tubes were made up of connective tissue.

in the first stage of development and those of others of connective tissue in the second stage of development (fibrous) like that of the stroma between the cords and tubes. Accordingly epithelial cells of the seminiferous tubules and the intertubular tissue had not only survived in the cortex of the graft but had developed into dense connective tissue.

For survival the graft must be grafted into suitable surroundings (serous or vaginal) and the flaps must not be more than 4 or 5 mm. thick so that the plasma and fluids of the host may penetrate them throughout to assure survival of the cells until blood vessels develop in the grafts. As long as there is epithelium with young connective tissue resulting from this transformation the graft will have a general action on the organism. This action may continue for four or five years.

ANDREW G. MORGAN, M.D.

### MISCELLANEOUS

Hitman, F. The Surgical Treatment of Lower Tract Tuberculosis. Genital and Vesical. *J. Urol.* 1925, 22, 321.

There is a difference of opinion among urologists as to the probable site of the primary lesion in tuberculosis of the genital tract. Those who contend that the primary lesion is in the epididymis base their contention largely on the fact that the symptoms improve after simple epididymectomy. Those who believe that the seminal vesicles and prostate are involved first base their assumption on the following facts:

1. Tuberculous epididymitis alone is a rare condition.
2. Clinical evidence of tuberculosis of the seminal vesicles or prostate without disease in the epididymis is more frequent.
3. Symptoms of disease in the vesicles or prostate often precede the appearance of the disease in the epididymis.
4. In every case of tuberculous epididymitis there is complete involvement of the globus minor; this apparently arising as the result of extension from the urethra.
5. Tuberculous lesions of the seminal vesicles and prostate are frequently found at autopsy without

lesions of the epididymis while lesions of the epididymis alone are rarely found.

6. When the entire genital tract is involved the lesions of the seminal vesicles and prostate appear to be more advanced.

7. Lesions in the globus minor of the epididymis appear older and more advanced than those in the globus major.

8. Microorganisms are repeatedly absorbed from the urethra and carried to the epididymis.

9. Tuberculous epididymitis has been produced experimentally by injuring the epididymis and then inoculating the urethra.

Hitman believes the seminal vesicles and prostate are the primary site of the infection.

There are two clinical types of genital tuberculosis: (1) that in which the more advanced or only lesion is in the epididymis and (2) that in which the seminal vesicles are involved with or without epididymitis. When there are no active lesions elsewhere the indication is epididymectomy for Type 1 and the radical operation for Type 2. In thirteen of the fifty-one cases reviewed the radical operation was done. If the epididymis is alone involved it should be removed and the patient kept under observation. If evidence of active tuberculosis of the seminal vesicles appears later, seminal vesicectomy can then be performed provided there is no active tuberculosis elsewhere.

In cases with active lesions elsewhere the decision as to the advisability of surgery and the type of operation must be based upon a consideration of the activity and extent of these lesions in relation to the activity and extent of the lesions in the genital organs.

After any form of treatment the patient should be kept under observation for a long time.

Vesical tuberculosis may remain the only active lesion after surgery and may be so advanced as to render life miserable because of pain, frequency and incontinence. The ureteral orifice becomes contracted by the tuberculous process and progressive hydronephrosis and renal insufficiency follow. Where there is no active tuberculosis elsewhere temporary nephrostomy with permanent ureterorectostomy may give relief and prolong life.

HARRY W. PLACEMAYER, M.D.

# SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

## CONDITIONS OF THE BONES JOINTS MUSCLES TENDONS ETC

Huebler O Acute Osteomyelitis in Childhood  
(Ein Beitrag zur akuten Osteomyelitis des kind-  
alters) *Niem med Wchenschr* 1927-1928  
lxviii 1456 1490 1521 1559

Huebler has brought together a large number of facts from the literature and from a material of 378 cases of acute osteomyelitis in childhood. From the general statistics it appears that acute osteomyelitis is distinctly a disease of the growth period and is most frequent in the first and second decades of life. The greatest number of patients examined were thirteen years of age. One hundred and forty two were males. In the majority of the cases the condition began in the warm season of the year, clearly because of the increased opportunities for traumatic and bacterial injury afforded by outdoor occupations. *Staphylococcus pyogenes albus* (which under suitable conditions—sunlight—easily becomes transformed into *staphylococcus aureus*), the streptococcus the pneumococcus and the typhoid bacillus are known to be exciting organisms of osteomyelitis. *Staphylococcus aureus* is found most frequently. The incubation time cannot be determined exactly. The average time is between twelve and forty eight hours.

In 20 per cent of the cases observed and reviewed there was primary involvement of the joints. In 70 per cent the osteomyelitis was limited to 1 focus. Metastases in the skeletal system were found in 30 per cent. The observation made by others that the course of the condition passes through several stages was confirmed. In 7 per cent of the cases periostitis aluminosa could be definitely demonstrated. In spite of the formation of extensive subperiosteal abscesses in the 6 cases cortical sequestra did not form. All of the cases of periostitis aluminosa healed well after wide incision and drainage. *Staphylococcus albus* was found 15 times and streptococcus and *staphylococcus pyogenes aureus* only once each.

Examinations to determine the end result were made in 107 of 232 cases. In 64 cases of osteomyelitis of the shaft good functional and cosmetic results were obtained even though in 36 per cent measurable lengthening or shortening up to 3 cm and curvatures could be demonstrated. The end results of uncomplicated joint disease and of metaphyseal disease with articular involvement were less favorable, almost 90 per cent of the patients presenting ankyloses and contractures.

Huebler agrees with Mayer as to the indications for operation. With regard to medical treatment he states that when correctly used the full vaccine

omnadin renders the clinical course of osteomyelitis milder and less complicated even though it may not cut the process short. GLAESSNER (Z)

Mensor M C Isolated Tuberculosis of the Carpus—Its Diagnosis and Treatment *California & West Med* 1928 xiv 336

The author has been able to collect from the literature only three cases of isolated inflammation of the carpal navicular bone. In only one of these was the inflammation due to tuberculosis.

In the case reported in this article there was a history of trauma to the right wrist. Immediately after the injury the wrist was splinted for three weeks despite negative roentgen evidence of injury. Seven weeks later the pain still persisted and as the patient had a history of pulmonary tuberculosis the wrist was subjected to another roentgen examination. No pathological changes were noted. The application of a plaster cast for a month was without benefit. Finally four months after the injury a definite fracture line was seen in the navicular bone. The bone was therefore removed. Both microscopic examination and guinea pig inoculation proved it to be tuberculous. After further immobilization of the wrist for four months the patient had perfect use of the joint and there was no evidence of spread of the infection.

MICHAEL L. MASON, M.D.

Irrmann E Early Roentgen Lesions of Coxalgia and Osteochondritis of the Hip (Les lésions radiologiques précoces de la coxalgie et de l'ostéochondrite de la hanche) *Rev d'orthop* 1928 xv 392

Irrmann describes the differential signs in the roentgenograms of coxalgia and osteochondritis of the hip. Decalcification is about as frequent in coxalgia as in osteochondritis, but in coxalgia it is generally more marked and does not spare the epiphysis. In osteochondritis it is more discrete and the epiphysis becomes decalcified in only a few cases. Therefore the difference in decalcification of the epiphysis is a good differential sign. Otherwise there is nothing characteristic in the localization of the decalcification in the two conditions.

Condensation of the epiphysis is exceptional in coxalgia but is quite frequent in osteochondritis. It is one of the most valuable differential signs.

Indistinctness of the joint space is noted almost always in both coxalgia and osteochondritis, but in coxalgia the head of the femur is almost always involved while in osteochondritis it is rarely involved.

Narrowing of the articular space above with broadening below is frequent in coxalgia but occurs usually after the age of seven or eight years while

in osteochondritis it generally appears earlier. It is a good sign when it exists but its absence is of no significance.

Simple enlargement of the articular space is rare in coxalgia and constant in osteochondritis.

There is no absolute differential roentgen sign between osteochondritis and coxalgia before the beginning of fragmentation and flattening of the epiphyseal center of ossification but condensation of this nucleus with flattening and atrophy and enlargement of the articular space suggest osteochondritis particularly when they are associated and in agreement with the clinical symptoms. The roentgen signs of coxalgia are not very characteristic except in cases with well marked destructive lesions. There is none that is absolutely pathognomonic. The diagnosis of coxalgia is based rather on the absence of positive signs of osteochondritis but a definite decision cannot be made until the evolution of the disease has been followed for some time.

AUDREY G. MORGAN, M.D.

Giacobbe C. Therapeutic Pneumarthrosis In Intra Articular Lesions of the Knee (Il pneumarthro terapeutico nelle lesioni endoarticolari del ginocchio) *Chir d organi di movimento* 1928 vii 433

Hemarthrosis is a common sequela of intra articular lesions of the knee such as tearing out of the insertion of the crucial ligaments, laceration of the fat pads, partial diastasis of bone fragments and fracture of the semilunar cartilage of the knee conditions classed by English and French surgeons as internal derangements of the knee. In the diagnosis of these lesions roentgen ray examination is of great aid especially after the injection of air into the joint.

In a report before the Third International Congress of Military Medicine in Paris in 1925 Caccia stated that the injection of Dakin's solution into the knee joint in traumatic hemarthrosis was curative because of the pneumarthrosis which resulted from the pressure of gas formed within the joint and closed the small bleeding points.

In the period from May 1926 to December 1927 the author applied Caccia's method in fifty cases of hemarthrosis, hydrohemarthrosis and traumatic hyarthrosis of the knee. The first thirty cases were treated in the first surgical section of the Cecho Hospital and the others in the Military Hospital in Florence.

Giacobbe believes that pneumarthrosis should be induced systematically and immediately in all cases of effusion of blood or serum in the knee after tearing unless there is a true osseous lesion. In cases of effusion with a true osseous lesion such as a fracture of the patella or a fracture of the lower end of the femur only paracentesis of the joint should be done.

In the induction of pneumarthrosis the skin is disinfected with a 5 per cent alcoholic solution of picric acid the effusion in the joint is emptied as

much as possible by means of a large needle the joint is washed out with a tepid solution of recently prepared Dakin's solution or sterile salt solution and filtered air which can be considered sterile is injected to fill the joint. The lavage of the joint may be done with the mouth apparatus employed for pneumothorax or with a large graduated glass syringe with a needle attached to rubber tubing which is plugged with cotton to filter the air. The injection is made in the upper outer angle of the patella.

The quantity of air injected is about equal to the amount of fluid withdrawn from the joint or is gauged by the distention of the joint or the patient's sensation of intra articular tension. After the injection an X ray exposure in two planes is made at once. This gives certain diagnostic data but the author discusses only the therapeutic effect of the injection in this article.

After the injection the limb is put in a metallic splint but the next day the splint is removed and massage of the quadriceps and careful progressively increased active movement of the joint is begun. When all excess heat has left the joint when partial absorption of the injected air has occurred and when there is no contra indication on account of the original lesion walking is usually begun after a week. This method avoids all dangers of immobilization of the joint containing blood.

The earlier this treatment is given the better the results because when it is applied soon after the injury it will prevent the clotting and deposition of layers of blood in the synovial recesses of the joint or on the irregular surfaces of the fracture. Coagulated blood irritates the synovia and prolongs the process by leading to a secondary serous exudate with the development of a hydrohemarthrosis. Organization of coagulated blood in the recesses leads to the formation of fibrous adhesion nodules and exuberant synovial fringes.

In contusion and simple distortion of the knee joint the results are best when the treatment is given within the first twenty four hours. In cases treated early the hemarthrosis is rarely reformed and lavage of the joint is usually not required because the blood has not yet coagulated. Massage and active and passive movements are begun on the day after the induction of the pneumarthrosis and walking is begun early to prevent atrophy of the quadriceps and to hasten the complete return of function.

Good results may be obtained also when the treatment is not given until four or five days after the injury but under such circumstances hospitalization of from thirty to sixty days is necessary and sometimes the joint tapping must be repeated. In cases not treated until a week after the tearing the results are less satisfactory.

Giacobbe draws the following conclusions:

1. Caccia's method of pneumarthrosis is absolutely harmless.

2. It is easy to use.

3. The results are better the earlier it is used.

4 By means of joint lavage with Dakin's solution septic complications synovitis fibrous hyperplasia and recurrent hydrarthrosis may be avoided  
5 Massage and early mobilization prevent atrophy and its consequences KELLOGG SPEED M D

### SURGERY OF THE BONES JOINTS MUSCLES TENDONS ETC

Kirschner M Operative Immobilization in Vertebral Tuberculosis (Die Wirbelversteifende Operation bei Wirbeltuberkulose) *Ztschr f Tuberk* 1928 h 106

On the basis of the results obtained in 100 cases of tuberculous spondylitis Kirschner recommends Albee's inlay operation for immobilization of the vertebrae as a method which will permit the patient to resume his occupation in a relatively short time even without the prolonged wearing of a supporting corset. Although in most of the cases reviewed the patient was obliged to leave the clinic after a brief stay and to resume his work after a few months complete healing was obtained in about 50 per cent. By entirely non-operative treatment healing is obtained in only 13 or 14 per cent.

The bone inlay should include three vertebrae above and three below the diseased vertebra. After the operation the patient should be kept in bed for three weeks and if possible should wear a supporting corset for a year.

Kirschner emphasizes the economic importance of the operation but recommends it also for patients in good financial circumstances because it shortens the period of convalescence. SIEVERS (Z)

Lenormant C and Wilmoth P Total Resection of the Tibiotarsal Joint (La résection tibio-tarsienne totale) *J de chir* 19 8 xvii 257

Ollier defined tibiotarsal resection as simultaneous removal of the lower ends of the tibia and fibula and of the astragalus. This operation has to a great extent been given up and the terms tibiotarsal resection and astragalectomy are considered synonymous. The authors review the history of the true tibiotarsal resection since the operation was first done by Moreau in 1797. They believe that tibiotarsal resection has still very definite indications in infected fractures of the joint and in tuberculosis. In tuberculosis of the ankle it does not replace astragalectomy but is indicated in cases in which the latter operation is insufficient the tuberculosis being very extensive and involving the external and internal malleoli and the roof of the joint. The typical total tibiotarsal resection gives good results only if the surrounding soft parts are not too much invaded. When the invasion of the soft parts is extensive resection must be performed. There is also a group of cases between those in which astragalectomy is indicated and those in which amputation is necessary in which total tibiotarsal resection is extremely useful. Two such cases are reported. The results were good in both.

The first step of the operation consists in an external incision for astragalectomy and removal of the astragalus. The second step is the removal of the malleoli. After the removal of the astragalus the foot remains attached to the leg only by the soft parts. It is then displaced inward so that the malleoli project through the incision and can be sawed off. The wound is explored and any fringes are removed.

It has been claimed that this operation results in a flat foot but it does not if extreme care is taken in adjusting the bones of the leg to the tarsus. The bones should rest on the anterior part of the upper surface of the calcaneum in contact with the scaphoid. The two cases reported illustrate this point. In the first one in which this adjustment was made the functional result was perfect. In the second the result was not so good because the bones of the leg rested farther back on the posterior part of the calcaneum and there was a large empty space between them and the scaphoid. To maintain the desired position a plaster cast should be applied. The cast should have an opening through which the wound can be watched. The bones may be fixed by a metal wire but suture is not necessary.

AUDREY G MORGAN M D

### FRACTURES AND DISLOCATIONS

Patterson R H The Internal Fixation of Fractures and Dislocations by the Use of the Human Fascial Suture *Am Surg* 1928 lxxviii 879

Patterson states that he has used fascial sutures for internal fixation with excellent results in fourteen cases of bone and joint injuries. He reports five cases in detail. The conditions in these five cases were an ununited fracture of the right humerus an unsatisfactorily reduced fracture of the tibia complicated by two fractures of the fibula an unsatisfactorily reduced fracture of both bones of the forearm a dislocation of the clavicle with separation of the acromioclavicular joint and a fracture of the clavicle. PAUL C COLONNA M D

Ravdin I S and Morrison M F Ossification After Fracture An Experimental Study *Arch Surg* 1928 xlvii 813

Ravdin and Morrison studied the healing of fractures of the radius in young normal dogs which had been given 20 cc of cod liver oil daily. Dogs whose serum calcium was raised by the administration of parathyroid extract (Collip) and dogs whose serum calcium level was lowered by thyroparathyroidectomy.

From their findings they conclude that no single factor is the cause of the majority of cases of non union. In one instance the non union may be due to the interposition of soft parts in another to insufficiency of the blood supply at the site of fracture due to injury or the location of the fracture in another to damage to the periosteum and in another to insufficiency of the inorganic constituents of

the blood. They believe that although a deficient inorganic phosphorus or calcium content may be the cause of abnormal or faulty ossification in the growing bone and in certain bone dyscrasias this factor is a rare one in clinical cases of non union of fracture.

PIETRO COLOVA MD

**Putti V** Statistical Research on Joint Fractures. Complete Statistics on the Fractures Treated at the Rizzoli Institute in the Period from 1899 to 1926 (*Ricerche statistiche sulle fratture articolari*). Statistica complessiva delle fratture curate all'Istituto Rizzoli 1899-1926. *Chir d'organi di movimento* 1928 XII 442

In the period from 1899 to 1926 2,732 fractures were treated at the Rizzoli Institute, Bologna. Eleven hundred and fifty-two (42 per cent) involved joints.

Six hundred and seventy-six (24.74 per cent) of the fractures involving joints occurred in the upper limb and 476 (17.05 per cent) in the lower limb.

Of the joint fractures in the upper limb 162 (5.92 per cent) involved the upper epiphysis of the humerus, 318 (6.80 per cent) the elbow and 186 (6.80 per cent) the wrist. Of the joint fractures in the lower limb 242 (8.55 per cent) involved the neck of the femur, 44 (1.61 per cent) the knee and 190 (6.95 per cent) the ankle.

The 2,732 fractures were of the following types:

	Fractures			Fractures	
	Number	Per cent		Number	Per cent
Shoulder	1	45	Wrist	10	6.80
Elbow	43		Hand	36	3.4
Cervical	3		Neck of femur	4	8.55
Scapula	0		Humerus	37	6
Clavicle	4		Elbow	43	3.6
Upper arm	14	3	Forearm	7	1.63
Lower arm	22	4	Wrist	10	6.80
Hand	10	1.61	Foot	90	6.95
Metatarsal	8	4.5	Phalanx	6	3.87
Toe	18	8.4	Metatarsal	51	9.7

KELLOGG SPEED MD

**Zanoli R** Fractures of the Upper End of the Humerus (Fratture dell'epi-<sup>1</sup> superiore dell'omero). *Chir d'organi di movimento* 1928 XII 445

In the period from 1899 to 1926 162 fractures of the upper end of the humerus were treated at the Rizzoli Institute, Bologna. Six (3.7 per cent) were fractures of the head of the humerus, 2 (1 per cent) fractures of the anatomical neck, 82 (50.6 per cent) uncomplicated fractures of the surgical neck, 15 (9.2 per cent) fractures of the surgical neck with dislocation of the head, 5 (3 per cent) epiphyseal detachments, 3 (1.8 per cent) isolated fractures of the greater tuberosity and 49 (30.2 per cent) fractures of the greater tuberosity with displacement of the shoulder.

One hundred and sixteen (71.6 per cent) of the patients were males. The incidence of the fractures at different ages is shown in a table. Eighty-five and eight tenths per cent of the fractures resulted from

direct violence such as that sustained in a fall on the shoulder. A few were caused by a fall on the elbow or hand.

X-ray examination showed that 2 of the 6 fractures of the head of the humerus were incomplete and 4 were comminuted.

In both of the cases of fracture of the anatomical neck of the humerus the fracture plane was oblique and in 1 it was dentate.

Of the 82 cases of fracture of the surgical neck X-ray study was possible in only 71. In 9 cases the fracture was transverse and impacted and in 7 it was oblique. In 26 cases of transverse fracture there was displacement. In 12 the displacement was lateral in 10 longitudinal and in 4 both lateral and longitudinal. In 8 cases there was an oblique fracture with displacement. In 7 cases there was a Y fracture and in 11 cases there was a displacement of the greater tuberosity in addition to the fracture of the neck.

In the cases of fracture of the surgical neck with dislocation of the head of the humerus the dislocation was primary and the fracture secondary. In 9 the dislocation was subglenoid and in 6 subcoracoid. In 7 cases with subglenoid dislocation and in the 6 cases of subcoracoid dislocation the fracture of the surgical neck was transverse. In 6 cases the greater tuberosity was pulled off.

In 3 of the 5 cases of epiphyseal separation there was displacement.

Of the 3 isolated fractures of the greater tuberosity 2 were partial and 1 was complete. This lesion is usually found as a complication of fracture of the surgical neck of the humerus or dislocation of the shoulder.

There were no open fractures. Twelve cases showed multiple fractures. Vascular and nerve lesions were rare. In 1 case there was paralysis of the radial nerve and in 1 case paralysis of the brachial plexus associated with a vascular lesion.

In 82.4 per cent of the cases non-operative treatment was given. Plaster of Paris dressings were used for all recent fractures showing little displacement. The arm was immobilized at once in half abduction, outward rotation and a slightly forward position. In cases with displacement of fragments the treatment was elastic traction or reduction under anesthesia with X-ray control.

The period of immobilization ranged from twenty to thirty days. In 2 cases open operation was done for vicious union when traction failed to modify the displacement. In 24 cases in which open operation was done the treatment consisted principally of simple replacement of the fragments but in 2 cases metal plates were used. In 4 cases of fracture of the surgical neck with displacement of the head of the humerus the head was first reduced and the disphysis of the humerus then held in contact. In a case in which union in good position had occurred between the head and shaft the head was reduced. In 3 cases the head was resected and the end of the disphysis placed in the glenoid.

Of 113 patients to whom an inquiry was sent 72 replied. Thirty nine reported the result as very good 23 as good 6 as fair and 4 as poor.

The results of non-operative and operative treatment were about equally good.

KELLOGG SPEED M D

**Camurati M. Fractures of the Elbow (Fratture del gomito) Chir d organi di movimento 1928 vii 452**

Camurati reviews 328 fractures of the elbow which were treated at the Rizzoli Institute Bologna in the period from 1899 to 1926. He groups them as follows:

Type of fracture	Cases	Percentage of total	Result	Old
Supracondylar		34.4	8	3
Distal humerus	37	11.3	3	8
Proximal radius	6	1.8	4	
Proximal ulna	9	2.7	7	2
Distal humerus	7	2.1	7	8
Distal radius	9	2.7	9	1
Distal ulna	4	1.2		

Two hundred and eighteen of the patients were males. The fractures were most frequent between the ages of five and ten years and 172 of them were on the right side. One hundred and ninety nine (66.67 per cent) were caused by indirect violence and 57 (17.37 per cent) by direct violence. Of the 112 supracondylar fractures 83 (74.10 per cent) were caused by extension and 29 (25.89 per cent) by flexion.

The primary complications of fractures of the elbow are bursting of the skin usually in the ante-cubital area, vascular lesions, nerve lesions and dislocations.

Bursting of the skin occurred in 2 of the cases reviewed.

Nerve lesions are most frequent in supracondylar fractures and are caused either directly by the trauma or indirectly by a bone fragment. Complete nerve severance is rare. In the only instance of such an injury in the cases reviewed the radial nerve was involved. Incomplete nerve lesions due to slight laceration or contusion are much more common than complete lesions. In the cases reviewed a primary nerve lesion was found in 20 (6.09 per cent). In 14 the radial nerve was involved alone and in 4 the median nerve alone. In both the radial and median nerves were injured. Ten of the radial nerve lesions and the 2 lesions involving both the radial and the median nerve resulted from supracondylar fractures caused by extension resulting in antero-external displacement of the distal humeral fragment of the humerus. The 4 other lesions of the radial nerve followed fractures of the external condyle and the 4 lesions of the median nerve followed supracondylar fractures caused by extension with antero-internal displacement of the humeral diaphysis.

Forty (12.10 per cent) of the fractures reviewed were complicated by dislocations.

The secondary complications of fractures of the elbow are ulceration of the skin or soft parts, severe vascular lesions, nerve lesions and ossification.

In 2 of the cases reviewed delayed ulnar palsy developed. One case was that of a man twenty four years old in whom the symptoms of palsy were first noted nineteen years after a fracture of the capitulum humeri.

Ossification occurred in 67 (20.42 per cent) of the cases reviewed. In 27 it followed a supracondylar fracture and in 26 of these the fracture was complicated by dislocation.

In general the treatment was based on the type and age of the fracture. In cases of recent fracture with no displacement of the fragments a plaster of Paris splint was applied with the forearm acutely flexed and supinated for from five to eight days and at the end of that time physiotherapy was given. Recent fractures with displacement of fragments were reduced under ether narcosis by manipulation with longitudinal traction, flexion, counter extension and lateral traction under X-ray control.

Fractures of the external and internal condyles and of the epicondyles with great displacement of the fragments in which manipulation failed to effect reduction were subjected to open operation with simple replacement and the use of a fibroperiosteal or wire suture. All fractures of the olecranon with separation of fragments were operated upon.

After operation or manual reduction a posterior moulded plaster splint was applied with the forearm in flexion except in cases of fracture of the olecranon. The period of immobilization ranged from eight to fifteen days.

The majority of old fractures were treated by physiotherapy. Open operation was reserved for cases in which a deforming callus interfered with the function of the elbow. When bony ankylosis was present arthroplasty was done with the use of free transplants of fascia. Primary nerve lesions were treated by electrotherapy with restoration of function in all cases. In cases of secondary nerve lesions neurolysis was followed by improvement.

Two hundred and sixty patients were traced for at least six months after the treatment. Very good results were obtained in 159 cases (61.15 per cent)—in 135 following closed reduction and in 24 following operation. Good results were obtained in 69 cases (26.53 per cent)—43 with closed reduction and 25 with operation. A fair result was obtained in 18 cases (6.92 per cent)—1 with treatment, 8 treated by closed reduction and 9 treated by operation. The result was poor in 4 cases (1.53 per cent), 3 of which were operated upon and 1 of which was not treated.

KELLOGG SPEED M D

**Soldi A. Fractures of the Wrist (Fratture del polso) Chir d organi di movimento 1928 xii 466**

Soldi reviews 186 fractures of the wrist which were treated at the Rizzoli Institute Bologna. These



constituted 6 8 per cent of all fractures. Sixty two and nine tenths per cent of the patients were males. The fractures were most common between the eleventh and fifteenth and the forty sixth and fiftieth years of age.

The fractures for which roentgenograms are available were of the following types: fractures of the lower end of the radius 111 (juxta articular 77, articular 34); fractures of the lower end of the ulna 6 (isolated 5, associated with fracture of carpal bones 1); epiphyseal separations of the radius and ulna 8; fractures of the lower end of the radius and ulna 4; fractures of the proximal row of carpal bones 4 (of semilunar bone alone 2, of scaphoid alone 1, of semilunar and other carpal bones 1); combined fractures of the carpus and the lower end of the radius and ulna 2 (scaphoid distal epiphysis of the radius 1, radius ulna scaphoid and capitate 1).

One hundred and fifty two of the fractures of the wrist resulted from indirect violence, usually a fall, and 9 were caused by direct violence (2 cases of back fire injuries).

Nerve complications were rare. In the case of a five year old boy who fell about 12 ft. and sustained an epiphyseal separation of the right radius and ulna with fracture of the ulnar styloid, the median and ulnar nerves were lacerated.

The treatment was as follows:

1. Fractures seen at once or within a few days after the accident. Reduction under ether anesthesia, immobilization for from ten to eighteen days in a circular plaster cast extending from the elbow to the ends of the metacarpal bones. Physiotherapy.

2. Fractures treated in other hospital or at the patient's home. Physiotherapy.

3. Fractures treated surgically. In this group there were 11 cases including 7 old cases with deformity. Osteotomy of the radius was done in 4 and simple removal of excess callus in 3. In a case of fracture of the semilunar bone with pain persisting for ten months the bone was removed.

In the 95 cases (53.6 per cent of the total number) which were followed up, the result was very good in 6 (27.36 per cent), good in 37 (38.94 per cent), fair in 28 (29.47 per cent), and poor in 3 (3.15 per cent). The 1 patient with a fracture of the semilunar bone who was operated upon had a good result. Two others refused operation.

The author's conclusions may be summarized as follows:

1. Most fractures of the wrist are of the juxta articular (Pouteau Colles) type. (In the cases reviewed the incidence of such fractures was 40.86 per cent.)

2. The incidence of joint fractures in the cases reviewed was 27.63 per cent.

3. The principal cause of fractures of the wrist is indirect violence.

4. For recent fractures of the wrist manipulative reduction is the treatment of choice. Operation should be reserved for old fractures with mal position.

5. Fractures of the scaphoid semilunar are best treated by operative removal of the fractured bone.  
FELLOE SPEED M.D.

Dessaint J. A Case of Avulsion of the Spinous Process of a Cervical Vertebra (Un cas d'arrachement d'une apophyse épineuse d'une vertèbre cervicale). *Rev d'orthop* 1928 xv 414.

The case reported was that of a truck driver fifty one years of age who was thrown from his seat on the truck to the ground striking his occiput with his chin flexed. When the patient entered the hospital immediately after the accident he complained of pain in the occiput and was unable to move his head forward more than 20 degrees without pain. Extension also was painful but was a little less limited. Rotation and lateral inclination of the head were not associated with pain. Pressure caused pain over the spinous processes of the fourth and fifth cervical vertebrae and a roentgenogram showed that the spinous process of the fourth cervical vertebra had been broken off. The detached fragment had descended about 1 cm. and touched the upper border of the fifth spinous process. The roentgenogram showed also a general opacity of the lymphatic glands of the neck on both sides of the tuberculous adenitis which the patient had had at the age of twenty one years.

The functional disturbances due to the lesion of the spinous process were too few to necessitate active treatment. *ANDRÉ G. MORAW M.D.*

Mutiel and Deloug. Irreducibility Due to the later position of Soft Parts in Congenital Dislocation of the Hip (L'irréductibilité par rétroversion de la luxation congénitale de la hanche). *Rev d'orthop* 1928 xxiv 385.

Irreducibility of the dislocated hip may be due to absence of the roof of the acetabulum, anteversion of the neck of the femur or the interposition of soft parts. The first two conditions can be shown by roentgen examination. In cases with interposition of soft parts a cushion between the bone and joint is noted on attempts at reduction. The treatment is removal of the interposed tissue. The article contains a diagram showing the different incisions used for excision of the retracted part of the capsule, the tissue which is generally interposed.

In the authors' opinion the best incision is one that is made between the pectineus and the adductors. As this incision is at a distance from the perineum it does not become contaminated by the faeces. Moreover in the space incised there are only superficial branches of the obturator nerve and while this space is at a distance from the head of the femur when the hip is extended it is very near to it in the position of forced abduction used for reduction of the hip and its axis corresponds to the axis of the capsule. Therefore with the thigh in the position for reduction of the hip the authors make an incision beginning at the inguinal fold, running parallel with the axis of the limb midway between the femoral

artery and the tendon of the adductors. At the bottom of the space between the pectineus and adductors the tendon of the psoas can be seen. This is pushed aside and the retracted part of the capsule exposed and excised. AUDREY G. MORGAN, M.D.

Hass J. The Lorenz Forking Procedure and Its Field of Application (Die Lorenzsche Gabelung und ihre Anwendungsgebiete). *Ergebn d. Chir. u. Orthop.* 1928 XXI 457.

In order to obtain firm bony union of the two fracture fragments an oblique frontal osteotomy from behind forward and upward is now done instead of the formerly used transverse or sagittal osteotomy of Hass. The osteotomy must not be too steep and should always be done at the level of the acetabular region. The middle point of the plane in which the osteotomy is done should be on a level with the center of the acetabulum. The abduction should be at an angle of from 30 to 40 degrees. Sometimes tenotomy of the adductors is necessary. The plaster cast is applied in the position of medium abduction, slight extension and slight inward rotation with the knee in slight flexion. After four weeks lateral hinge joints are built in at the knee in order to allow movement of these joints. After six weeks the patient is allowed to get up and to walk with crutches. Only after three months is the cast removed. A few days after the operation the position of the shaft of the femur should be determined by roentgenograms in order that it may be improved if necessary.

This operation is indicated chiefly for congenital luxations of the lateral or posterior type which are marked and loose and cause pain but should be done only after all attempts at ameliorating the symptoms by conservative measures have failed. In pathological luxations of the hip it is often the only procedure by which the condition may be improved. It may be considered also for paralytic and traumatic dislocations which have become irreducible and is of great value in cases of pseudarthrosis of the neck of the femur especially the relaxed type. It is recommended also for dislocating coxa vara and arthritis deformans. In tuberculous coxitis in the acute stage it should be performed only when good results and absolute harmlessness are assured.

After citing a series of favorable operative results reported by others the author reviews those obtained in 6 of 105 of his own cases in which a follow-up examination was made. In 53 per cent the result was good in 28 per cent satisfactory and in 19 per cent unsatisfactory. The best results were obtained in unilateral congenital dislocations of the hip. In cases of bilateral and pathological luxations a good result was obtained in only 40 and 43 per cent respectively and in pseudarthrosis of the femoral neck in only 27 per cent. The remaining cases were too few to allow any definite conclusions regarding them. Failures were due to improper position of the fragments especially slipping of the distal fragment anteriorly over the pubic bone which frequently causes long continued pain the

slipping of the proximal fragment which negatives every operative result too great abduction and limitation of mobility. Such results are caused by errors in the technique of the operation.

ERLACHER (Z)

Dusi E. Fractures of the Neck of the Femur (Fratture del collo del femore). *Chir. d'organi di movimento* 1928 XXI 473.

In the period from 1899 to October 1, 1926, 24 fractures of the neck of the femur were treated at the Rizzoli Institute, Bologna. These constituted 19.16 per cent of all fractures of the lower limb and 64.4 per cent of all fractures of the femur.

One hundred and thirty-six (56.29 per cent) of the patients were males. Senile osteoporosis advanced age and falls of the aged are given as causes but the fractures occurred also in young persons.

According to Delbet's classification 30 per cent of the fractures were subcapital, 35.5 per cent transcervical, 21 per cent cervicotrochanteric and 13.5 per cent intertrochanteric.

Of 96 recent fractures 45 were in the true neck of the femur and 51 were cervicotrochanteric. Fifteen cervical and 5 cervicotrochanteric fractures occurred in persons under forty years of age.

Ninety-six cases were treated by non-operative measures and 40 by operation.

In the non-operative treatment the patient was kept in bed for a few days with the application of weight and extension to hold the leg in abduction of about 30 or 30 degrees and with transverse traction to bring about internal rotation. Counter extension was applied by means of a foot piece against the sound foot and a cotton roller about the roof of the sound thigh which was fastened to the head of the bed. In addition the foot of the bed was raised.

When the roentgenogram showed proper reduction a plaster of Paris cast including the whole pelvis was applied with the leg in slight abduction and internal rotation. When there was great separation of the fragments traction was applied on a fracture bed following the induction of anesthesia. Three or four days after this immobilization the patient was made to get up and move about on crutches daily the exercise being gradually increased. By this method the time in bed was shortened pulmonary complications were avoided and better osteogenesis and consolidation were obtained.

The ambulatory immobilization was continued for from six to eight months with roentgenographic control of the amount of callus formed. After six months if all went well the plaster dressing was bivalved or replaced by a bivalved dressing so that physiotherapy could be given.

The operative procedures included the use of a beef bone peg or a metal screw. In cases of rather recent fracture in which coaptation of the fragments could be secured by simple external pressure on the limb or the roentgenogram showed only slight separation of the fragments or on account of the patient's age or some other factor a prolonged opera-

tion was to be avoided the pegging was done with out arthrotomy on the hip. Local anesthesia was induced in an area around the greater trochanter of the femur about 8 cm. wide and the bone peg was introduced by guides into the head of the femur. The whole limb and the pelvis were then encased in plaster of Paris while the patient lay on the fracture table with the leg abducted and rotated inward.

In 8 of the 12 cases in which a metal screw was used an arthrotomy on the hip was done because of the wide displacement of the fragments, the age of the fracture and the vicious position of the leg.

To perform arthrotomy a lateral antero-external incision was made in the hip through the sartorius and fascia lata. The fracture site was then sought all interposed tissue was removed and the fracture was reduced by traction rotation and abduction. The screw was introduced to the head of the femur through a second incision over the greater trochanter and the whole limb then enclosed in plaster.

In 4 cases an autogenous bone peg from the tibia was used. In 3 of these in which the fracture was old arthrotomy on the hip was done.

Osteotomy was reserved for cases of old fracture with great displacement of the fragments or with bending of the femoral neck. According to the requirements of the particular case the osteotomy was linear oblique subtrochanteric or intertrochanteric. In a few instances an effort was made to pull the neck fragment down to the level of the head fragment by skeletal traction applied through the os calcis.

In a few cases in which the roentgenogram showed considerable absorption of calcium salts with absorption of the neck a reconstruction operation was performed.

The results were considered excellent when there was no pain and little or no shortening, the joint had a full range of movement and the patient was able to return to his former occupation. They were considered good when there was only slight lameness with slight restriction of hip movement and the patient's activities were almost normal. They were considered fair when the use of a cane was necessary and the patient's ability to work was reduced. They were considered poor when the patient was lame and unable to do heavy work, the movement in the hip joint was greatly reduced or entirely abolished and the joint was painful. The results of non-operative and operative treatment were as follows:

TABLE I—RESULTS IN 96 CASES FOLLOWING NON-OPERATIVE TREATMENT

Nature of Fract.	No.	Result				
		Poor	Fair	Good	Excellent	Death
Transc. neck	0	3	6	6	4	
Intertrochanteric	3	7	9	4		
Subtrochanteric	4		5	9	7	0
Old	1	3		4		

TABLE II—RESULTS IN 40 CASES FOLLOWING OPERATIVE TREATMENT

Nature of Fract.	No.	Result				
		Poor	Fair	Good	Excellent	Death
Bone peg	5	4	4	6		
Screw	1		5		3	0
Aut. bone peg	3		2		1	0
Arthrotomy	6	1	1	1		0

The author concludes that in the cases of aged patients and when proper care is not delayed too long excellent results can be obtained by non-operative treatment. In bone pegging without arthrotomy on the hip the operative trauma is minimal but as it is not always possible to determine the position of the fragments exactly by X-ray control the bone peg may be directed incorrectly so that it fails in its purpose.

The value of the autoplasmic bone peg in stimulating osteogenesis is doubtful.

KELLOGG SPEED MD

Zanoli R. Fractures Involving the Knee (Fratture del ginocchio). *Chir. d'organi di movimento* 1913, 1: 432.

Zanoli reviews forty four fractures of the knee. Thirteen (29.54 per cent) were fractures of the lower end of the femur and thirty one (70.45 per cent) were fractures of the upper end of the tibia. Of the former five were bicondylar, four involved one condyle, two were epicondylar and two were trochlear. Of the latter six were bicondylar, five were intercondylar, fifteen involved one condyle (nine the external condyle), two involved the spine, one involved the anterior tuberosity and two involved the metaphysis.

Four of the five bicondylar fractures resulted from indirect violence due to a fall on the flexed knee, the force acting by pressure and increased flexion of the leg. One was the result of torsion. The monocondylar fractures were caused by falls on the flexed knee, falls from a height, direct violence on the condyle and torsion.

The fractures may be of the 1 or 2 form with fragment separation or simply narrow fissures. In fractures of one condyle the crucial ligaments usually hold the fragment close in or may aid in its rotation. Gross deformities are shown either by a varus or a valgus position of the knee depending upon which condyle is fractured.

In the so called paracellular fractures of the trochlea a small fragment of the medial surface of the femoral trochlea is broken off. The author reports two cases in detail. When the leg is flexed the patella may slip into the defect thus forming a dead space when this occurs there is pain with limitation of flexion of the leg and joint effusion. The bony fragment may remain loose in the joint or become attached. In some cases it may cause joint locking by

entering the intercondylar space or penetrating beneath the patella. Cases seen early may be treated by prolonged immobilization but in late cases arthromy on the knee for removal of the fragment is necessary.

The author reports a fracture of the median epicondyle of the femur due to a fall of about 3 ft while the knee was in a marked valgus position and another due to twisting of the leg. When the roentgenogram made immediately after the injury shows the edge of the small fragment to be dentate there can be little doubt of the occurrence of fracture. As a rule the treatment indicated is simply physiotherapy but in a few cases open operation may be required for suturing of the tendon insertion into the adductor tubercle or for the repair of lacerated lateral ligaments of the knee.

Fractures of the tuberosities of the tibia are most common in young adult males and most frequently involve the external tuberosity. They are not truly knee joint fractures but they enter and involve the knee. Indirect violence such as a fall on the foot with compression of the head of the tibia is the most frequent cause. The position of the leg at the time of the trauma whether valgus or varus determines which tuberosity will be injured. The author believes that most fractures of the external tuberosity are vertical while those of the internal tuberosity are oblique. In fractures of the internal tuberosity the tibial spine is frequently involved.

In fractures of both tuberosities compression is evidenced by penetration of the proximal fragments into the shaft of the tibia. The displacement of fragments is not great and is often angular. It is increased when the head of the fibula is broken.

In discussing fractures of the tubercle of the tibia the author reports the case of a man sixty years of age. In this instance the loose fragment could be felt and there was pain on joint motion especially on extension. Bilateral fractures of the tubercle of the tibia occur more frequently in males than in females. Up to the age of twenty five years the majority are epiphyseal separations. The mechanism is a sudden forceful contraction of the quadriceps or forced flexion of the leg. The principal symptoms are pain localized over the tubercle and abnormal mobility of a bony fragment at the insertion of the patellar tendon into the tibia. There may be also a joint effusion. The degree of interference with extension of the leg depends upon whether the fracture is complete or partial. The condition must not be confused with Osgood Schlatter disease of this epiphysis. In the case reported by the author simple aspiration of the swelling relieved the pain which lasted a year.

Two cases of fracture of the spine of the tibia are cited. The whole interglenoid spine or only the median or lateral spine may be disrupted. In some instances the fracture is combined with fracture of the tuberosities of the tibia. The mechanism is probably a sudden extreme rotation of the leg on the thigh exceeding normal limits which causes a

tearing out of the spine by the powerful crucial ligaments. This theory is supported by the fact that most isolated fractures of the tibial spines involve the median spine into which the anterior crucial ligament is inserted. The treatment usually indicated is immobilization followed by physiotherapy but if the symptoms persist surgical exposure of the knee joint may be necessary.

KELLOGG SPEED M D

Faldini G. Fractures of the Malleoli (Fratture malleolari). *Chir d organi di movimento* 1928 xii 509

In the period from 1896 to 1926 190 fractures of the malleoli were treated at the Rizzoli Institute Bologna. These constituted 6.95 per cent of all fractures and 16 per cent of all fractures of the leg. The greater number of the patients were between twenty and thirty years of age and 66.8 per cent were males.

The cause of the fracture was direct violence in 36.56 per cent of the cases, a fall from a height in 23.8 per cent, adduction and supination in 23.13 per cent, abduction and pronation in 14.8 per cent and torsion in 1.4 per cent.

Of the 193 fractures which were studied with the X ray 31 (27.4 per cent) involved 1 malleolus—13 (11.5 per cent) the tibial malleolus and 18 (15.9 per cent) the fibular malleolus. 43 (37.9 per cent) were bimalleolar fractures—22 (19.4 per cent) without and 21 (18.5 per cent) with displacement of fragments. 34 were Dupuytren's fractures—15 (13.4 per cent) without and 19 (16.7 per cent) with displacement of fragments and 5 (4.07 per cent) were supramalleolar fractures.

Many of these fractures were complicated by lesions of the soft parts and some of them were open fractures. Other frequent complications were fractures of the tarsus and leg.

The 82 recent fractures were treated by non-operative measures. In 69 cases manual reduction was effected under ether anesthesia with X ray control either before or immediately after the application of a plaster of Paris dressing. The plaster dressing extended from the lower third of the thigh and encircled the leg which was flexed at about 30 degrees and all of the foot. The position of the foot during immobilization was generally strong supination which in most cases controlled the displacement of the fragments. The immobilization was continued for from twenty five to forty days, the patient then being allowed to walk but not to bear weight. Seventeen cases with involvement of only one malleolus and no separation of the fragments were cured by ambulatory treatment. Seven cases required prolonged confinement to bed and skin traction on the leg. In 5 cases a light celluloid splint was applied after removal of the plaster and in 1 case skeletal traction was applied through the os calcis.

The results were excellent in 27 cases, good in 25, fair in 4 and poor in 1.

The author concludes that for recent fractures of the malleoli reduction and immobilization by non operative methods is the treatment of choice

One hundred and eight fractures of the malleoli were old. Of 107 cases reviewed the principal complaint was pes valgus in 46 (43.1 per cent) rigidity and pain in 38 (37.2 per cent) pes varus in 9 (8.8 per cent) pes equinus in 7 (6.9 per cent) and fistula in 2 (1.9 per cent)

The treatment in the cases of old fracture was open operation in 25 cases the application of a

plaster dressing in 14 and physiotherapy in 61. In 8 cases no treatment was given

The results were excellent in 9 cases good in 32 fair in 30 and poor in 9

Physiotherapy was employed only in cases with good position of the fragments or only slight alteration of the joint surface. The application of air heated to from 110 to 120 degrees F. was followed by massage and functional re-education. In a small percentage of the cases a metal arch support was used

KELLOGG SPEED M.D.

# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

## BLOOD VESSELS

Lemann I V. Coronary Occlusion in Buerger's Disease (Thrombo Angilitis Obliterans) *Am J M Sc* 1934 cxxxviii 807

Lemann deplors the paucity of autopsy reports in the literature on Buerger's disease and urges that all autopsy findings in this condition be recorded even when the death did not occur until a number of years after the amputation of the affected limb. He believes that the underlying causative agent of thrombo angitis obliterans may predispose the vessels of the other parts of the body to other forms of disease particularly arteriosclerosis. In three of five autopsies on cases of thrombo angitis Lemann noted an affection of the coronary arteries. Because of the possible relationship of thrombo angitis obliterans to arteriosclerosis and the predisposition of victims of Buerger's disease to involvement of centrally located vessels he believes that further studies of these centrally located arteries is of the greatest importance. **EMIL C ROBITSEK M D**

Brooks B Blalock A and Johnson G S. Ligation of the Terminal Abdominal Aorta. An Experimental Study. *Arch Surg* 1928 xvi 794

After occlusion of the abdominal aorta the cardiac output is decreased and there is little if any change in the blood pressure in the artery proximal to the occlusion. Immediately after the occlusion there is a transfer of the blood volume from the distal to the proximal aspect of the obstruction.

The fact that the blood pressure in the base of the aorta is so little altered by the relatively great changes in the condition of the peripheral circulation which must follow the occlusion of so large a vessel as the abdominal aorta is evidence of the importance of the vagopressor reflex which operates to keep the arterial blood pressure constant in the presence of alterations in the venous pressure and the output of the heart.

**HOWARD A MCKNIGHT M D**

Cotton Cornwall V and Ponder C W. Extensive Pulmonary Embolism Following Fracture. *Br J M J* 1928 xi 289

The case reported was that of a woman who entered the hospital with a fracture of the left tibia and fibula. The leg was fixed in plaster of Paris. Following the patient's discharge from the hospital two weeks later the limb was massaged by a district nurse who was not a trained nurse. When the leg was examined by one of the authors six weeks after the accident union appeared perfect and there was no shortening of the leg. The ankle and leg showed moderate oedema but there was no varicosity of the

superficial veins. The ankle and knee which were stiff were forcibly moved through a few degrees. The nurse was instructed how to massage and move the leg and the patient was given permission to walk on crutches. She stated that she felt ill but no cause for illness could be discovered and she did not appear to be ill. A sedative alkaline mixture was given and it was reported that the sickness ceased the same day.

At midday two days later the patient requested to be helped out of bed but almost immediately afterward she wanted to return and had hardly been helped back when she gave a slight groan rolled onto her right side and then rolled onto her back and expired.

At autopsy the neck appeared unduly movable but the cervical vertebrae were normal. No fracture of the cranial bones could be found. The brain and abdominal viscera were also normal. The diaphragm was contracted. The lungs appeared normal but did not fill the thorax. The heart was contracted and appeared normal.

The heart and lungs were removed and dissected out. When the right ventricle and pulmonary artery were opened a long clot about the size of the lumen of the internal iliac vein was found. This had evidently become folded so that two ends were passing into the right branch and two into the left branch of the pulmonary artery obstructing the flow of blood to the lungs and causing sudden death. The clot could not be extracted by traction. There was also a free end pointing to the pulmonary valve. When the clot originally reached the heart it must have been several inches long.

Noteworthy features of this case were

- 1 The lack of proper massage and movement which favored stasis of the blood.
- 2 The absence of evidence of thrombophlebitis before the embolism occurred.
- 3 The length of time the patient lived presumably with the large foreign body moving about in the heart the only symptom being a vague illness.
- 4 The remarkable size of the clot.

**JOHN J MALONEY M D**

Petitpierre M. Embolectomy on Arteries of the Extremities. Collective Review and Report of Twelve New Cases (Ueber Embolectomie der Extremitätsarterien. Eine Zusammenstellung und ein Beitrag von 12 Fällen). *Deutsche Ztschr f Chir* 1928 cccv 184

A brief account of the history of embolectomy is followed by a statistical review of 118 cases of this operation from the literature and a detailed report of 12 cases from the Swiss record.

The site of primary thrombosis is to be sought in either the arterial or the venous system (paradoxical embolism). The basic disease is usually acute or chronic endocarditis arteriosclerosis syphilis or myocarditis. Operations as causes come second infectious diseases third. Other causes are parturition and abortion.

The embolus may become anchored at the bifurcation of an artery or impacted in its lumen. At the site of the embolus there is frequently a local spasm of the vessel probably due to traumatic irritation of the nerves of the adventitia and the periaarterial plexus from distention of the vessel wall. The sudden pain may be similarly explained.

Embolus of an artery of an extremity is but one of a series of emboli. A secondary thrombosis develops at a point peripheral or central to the embolus. Conditions are not favorable for the formation of a collateral circulation.

The statistics show that embolism is more common in women than in men and in persons beyond middle age than in young persons. The sudden very severe pain is characteristic. Sooner or later circulatory disturbances are manifested by such signs as paresthesias numbness and a burning sensation. Sensibility and motility decrease. The extremity becomes pale in some areas and cyanotic or marbled with blue in others. General symptoms such as dyspnoea cyanosis and a feeling of anxiety are not infrequently mentioned.

In the differential diagnosis acute transverse myelitis and hæmatomyelia threatened gangrene on an arteriosclerotic or diabetic basis gangrene from frostbite and above all thromboangiitis obliterans must be considered. Raynaud's disease and intermittent claudication have a slower course.

In the localization of the embolism which is difficult the behavior of the pulse and the extent of the circulatory disturbances are of importance. Palpation and sensitiveness to pressure are of aid only when the artery lies near the surface. The primary pain of the embolism suggests the location of the embolus only when it is characteristic. Emboli are found most frequently where the subscapular artery branches off from the axillary artery at the bifurcation of the brachial artery at the bifurcation of the aorta at the point where the profunda branches off from the common iliac and in the poplitea. When the lumen of the aorta is completely occluded the symptoms are bilateral. When the embolus is situated deeper the limits of the circulatory disturbances change accordingly.

The only treatment is embolectomy. If possible this should be done under local or spinal anaesthesia. The removal of the embolus may be effected by the direct or the retrograde route. If in the latter method it is impossible to mobilize the embolus by stroking with the finger it may be removed with Merke's embolus extractor a corkscrew like instrument with a blunt tip.

The outcome of the condition depends chiefly on the basic disease. It is influenced also considerably

by the extent of the secondary thrombosis and thus in turn depends upon the time that elapses between the occurrence of the embolism and the operation. The importance of early operation is therefore apparent. When the patient comes to operation within the first ten hours the prognosis is excellent. It has been shown that the results of embolectomy are best in cases of emboli of the upper extremities less favorable in those of emboli of the lower extremities and poorest in those of emboli of the aorta and the iliac arteries. According to the author's collected statistics clinical cure results in 47 per cent.

Summing up the author comes to the conclusion that in spite of the severity of the basic disease and the difficulties in the localization of the embolus and the operative technique embolectomy frequently promises success in early cases and is worthy of wider recognition. H. VICKA (Zl.)

## BLOOD TRANSFUSION

Heusser H. Postoperative Changes in the Blood and Their Importance in the Development of Thrombosis (Postoperative Blutveränderungen und ihre Bedeutung fuer die Entstehung der Thrombose). *Deutsche Zeitschr. f. Chir.* 1912 cxx, 132.

The author attempts to show that of the three chief causes of postoperative and spontaneous thrombosis—slowing of the blood stream a change in the vessel wall and alteration in the blood itself—the last is the most important and determines the two others. Following a review of the literature on postoperative blood changes he reports the results of his own investigations.

Heusser demonstrated that in the first days after operation there is a hypoproteinaemia with a relative increase in globulin and an increase in the viscosity quotient. He found also that the fibrinogen content increases during the first postoperative days and then slowly falls and that the lability of the plasma and the sedimentation rate of the erythrocytes are increased. The postoperative blood changes increase the agglutinative power of the blood platelets and the precipitation of fibrin and thereby the tendency toward coagulation. This was demonstrated in tests with pig serum in which precipitation was found to run parallel with the increased rate of sedimentation of the erythrocytes.

The statistics of the University Surgical Clinic at Basel show that 30 per cent of all thromboses occur in cases of inflammatory diseases and tumors conditions which lead to pronounced alterations in the blood (increased sedimentation rate of the erythrocytes etc.).

In marantic thrombosis slowing of the circulation of the blood plays the chief rôle whereas in purely inflammatory thrombosis at the site of the inflammation the most important factor is the change in the walls of the blood vessels and in postoperative thrombosis it is the change in the character of the blood.

No distinction is made between thrombosis and coagulation. In thrombus formation the author sees only a particular kind of intravascular coagulation in which there is usually a transformation of the fluid plasma into the state of gel followed by the adhesion of blood platelets to the vessel wall and later a visible precipitation of fibrin. The frequency of thrombus formation in infectious processes at a distance from the focus of inflammation is due to the general readiness of the entire blood plasma to undergo thrombosis. It is possible that these changes in the blood take place also as a consequence of advancing age which would explain the increase in the chances of thrombosis with increased years in which the blood also grows old (CARREL).

BUDDE (Z)

Held I W. and Goldbloom A. A. *Fundamental Principles Governing the Clinical Interpretation of Hematological Diseases*. *Med Clin N Am* 1928 21 713

The authors have covered the entire field of hematological diseases mainly from the clinical standpoint though the basic conceptions are considered more or less exhaustively. They state that the term blood disease is not altogether satisfactory as it does not designate the organ or organs at fault. Morphological changes in the blood may be purely functional and unassociated with any changes in the hematopoietic system differing thus from the changes occurring in organic conditions in which the blood forming organs return to their embryonic functions. The elements of the blood may vary normally though the white cells are more susceptible to changes than the red cells. There appears to be a normal variation of the white cells during the day after meals during pregnancy and during labor. There are numerous factors which may account for these variations but it is certain that overproduction in the bone marrow is not a cause.

As applied to conditions affecting the erythropoietic system the term regeneration is a misnomer. The process is not one of repair but rather a disease mechanism producing unripe short lived cells.

The authors classify the anemias into nine groups as follows: (1) hemorrhagic (2) carcinomatous (3) infectious and parasitic (4) alimentary (5) erythropoietic diseases which include pernicious anemia, chlorosis, aplastic anemia, hemolytic icterus, sickle cell anemia (6) anemia due to chronic interstitial nephritis (7) anemia due to chemical poisoning (8) anemia of pregnancy and the puerperium and (9) metabolic anemia.

In anemia due to chronic hemorrhage the reduction of hemoglobin and the reproductive process in the bone marrow are not so marked as in the acute hemorrhages. Bleeding from an endothelial surface gives rise to less anemia than bleeding from a mucous surface. Anemia due to carcinoma may be present in cases of the so called cachectic type of carcinoma without active hemorrhage such as

cecal carcinoma with incompetence of the ileocecal valve. In cases of bleeding carcinoma the anemia is particularly marked if the condition affects the gastro intestinal canal. When bone marrow metastases are present the blood picture of pernicious anemia may be found. Some carcinomata so affect the bone marrow as to cause the same picture in the absence of bone metastases.

Of the infections which are likely to give rise to marked anemia in many of which the site of the infection is not apparent until after death the authors discuss particularly hematogenous infections of the kidney, subphrenic abscess, endocarditis and cholecystitis due to the streptococcus viridans, chronic prostatic abscess, pulmonary abscess and infections of the sinuses and teeth. Acute syphilis and malaria may give rise to severe secondary anemia.

The authors agree with Minot, Murphy and Sabin that pernicious anemia is best explained on the basis of some constitutional inferiority of the erythropoietic system in which there is an endogenous vitamin deficiency which prevents the red cell from maturing or exposes them to early destruction. The chief value of the liver diet seems to lie in its power to mobilize vitamins. The role played by achylia is not clear but it seems impossible to disregard the constitutional factors. Besides the usual blood findings the authors have noted the erythrocytosis described by Schilling. These are rod shaped intracellular bodies demonstrable by a special technique with a Nile blue sulphate stain. The increased icterus index in the serum and the marked increase of urobilin in the urine are important findings.

Polycythemia is probably due to failure on the part of the spleen to destroy red blood cells, a hypothesis which fits in with the absence of urobilin from the urine and the lowered icterus index.

The leukemias are discussed particularly from the clinical standpoint. The acute lymphatic type may be difficult to diagnose if it is seen in the aleukemic or subleukemic stage though a leucopenia with from 70 to 80 per cent small lymphocytes is diagnostic. Chronic infectious mononucleosis must not be confused with acute leukemia. Chronic lymphatic leukemia is easily diagnosed as a rule but an acute infection may change the blood picture temporarily to that of an ordinary leucocytosis. Acute myeloblastic leukemia may be confused with thrombocytopenic purpura particularly in the more acute forms. Chronic myeloid leukemia produces the largest spleen of any of the splenomegalies and although the white count is usually very high there may be times when there is only a moderate increase and only the differential count is conclusive.

Splenomegaly anemia is characterized by enlargement of the spleen, secondary anemia, leucocytosis or leucopenia and a relative diminution in the blood platelets. There is slight tendency toward hemorrhage and slight or no enlargement of the superficial glands. Cases of Banti's syndrome are



best divided into two groups (1) those in which the etiology is clear (thrombophlebitis of the splenic or portal veins primary *Laennec's cirrhosis* lues or tuberculosis of the spleen) and (2) those (much rarer) with no evident etiological factor which the authors prefer to call primary Banti's syndrome. Gaucher's splenomegaly is of insidious onset and chronic course. Enlargement of the spleen may be present for a long time before weakness, pain in the left hypochondrium and hemorrhages from the mucosa and skin lead the patient to consult a physician.

Hodgkin's disease has a considerably more favorable prognosis than formerly because of its present-day treatment with radium and the roentgen rays. In cases in which the superficial glands are not enlarged the diagnosis may be difficult. When the spinal cord is pressed upon by enlarged glands a diagnosis of cord tumor may be made. The Fels-Leusden temperature curve may suggest tuberculosis.

Thrombocytopenic purpura may be acute or chronic, severe or mild. In the fulminant type hemorrhages from all of the body surfaces, fever, marked reduction in the platelets and anemia are striking. The pathogenesis is not clear. It seems that the platelets produced are of inferior quality and are easily destroyed by the spleen and other cells of the reticulo-endothelial system. After removal of the spleen the platelets have a better chance to mature.

Treatment is discussed at length. Secondary anemias are treated by rest, fluids and blood transfusion. In some instances of gastric hemorrhage due to ulcer lavage may empty the stomach of clots and stop the bleeding by allowing the organ to contract. In less acute cases some form of iron therapy is of value. The dietary treatment of pernicious anemia is given at length. Splenectomy is of value in congenital hemolytic icterus, Banti's disease (if done early) and Gaucher's disease. In acute and severe cases of thrombocytopenic purpura splenectomy should not be delayed too long. In mild cases a vitamin-rich diet, iron and calcium will lead to improvement. Polycythemia is best treated symptomatically. The use of drugs such as benzol, toluyendiamin and phenylhydrazin is dangerous. The acute leukemias are amenable to no treatment but the chronic forms are benefited temporarily by roentgen therapy. There is no satisfactory treatment for Hodgkin's disease.

MICHAEL L. MASOV, M.D.

Goldstein, E. Schoenlein Henoch's Purpura. Report of a Case with a Review of the Literature. *Med Clin N Am* 1938 xii 309.

Goldstein reports a case of Schoenlein Henoch's purpura in a man fifty-two years of age which ended fatally after a course of slightly over four months. There had been epigastric pain without nausea or vomiting for over three months when the left knee and later the left ankle became swollen and painful

and a bluish purple eruption appeared on the inner surface of both legs. After the patient's admission to the hospital the abdominal symptoms increased, vomiting occurred and the bowel movements became brownish and stringy. The blood showed changes of secondary anemia. The Wassermann test was negative and the sputum was negative for tubercle bacilli. Urinalysis showed albumin. X-ray examination of the gastrointestinal tract revealed an area of partial obstruction. The patient became critically ill and died during a transfusion. Autopsy showed a perforation of the cecum and several ulcers in the intestine elsewhere.

Schoenlein Henoch's purpura appears to be a condition of the blood capillaries in which these vessels are dilated, lengthened and distorted. The whole clinical picture may be explained by the action of a toxic substance of food or bacterial origin, histamin or a histamin-like body on the capillary bed. In some respects the condition resembles an anaphylactic reaction. There may be lesions in the skin such as purpuric spots, wheals, erythema or necrosis. In the gastrointestinal tract there may be lesions requiring surgical intervention such as ulcers and necrosis leading to perforation. Intussusception is not very infrequent. Swelling and pain in the joints follow hemorrhage into the joint capsule and synovia. The kidneys may suffer particularly severely with a transient albuminuria, an acute nephritis with terminal uræmia or a chronic nephritis with secondary cardiovascular changes. There is nothing characteristic about the blood picture.

The condition is most common in females and in the second decade of life. It differs both clinically and hematologically from thrombocytopenic purpura.

The prognosis is usually good but the gastrointestinal or renal complications may prove fatal. It must be remembered that surgical intervention may be indicated in case of intussusception or perforation of the bowel.

MICHAEL L. MASOV, M.D.

## LYMPH GLANDS AND LYMPHATIC VESSELS

Knappper, C. Chylangioma and Chyle Fistulae of the Lower Limbs and External Genital Organs. (Ueber das Chylangiom und die Chylfisteln der unteren Gliedmaßen und der äusseren Geschlechtsorgane). *Arch f klin Chir* 1928 cl 02.

Knappper reports the case of a five-year-old boy in whom the chyle had made its way from the cisterna chyli into the lymph vessel system of the leg as far as the popliteal fossa. The case was under observation for several years and was treated successfully by operation. The operative wound healed from the abdominal cavity outward. Re-examination a year later showed a good result. The condition was apparently congenital. Twelve cases reported in the literature are also discussed.

The author draws the following conclusions:

1 In the circulatory region of the lumbar trunk there occurs a deviation from the normal which might be called a chylangioma diffusum. There is marked dilatation of the lymph vessels and the system of valves functions poorly or not at all so that the chyle is able to penetrate into the pathological lymph vessel region.

2 It is uncertain whether this abnormality is a dilatation or a neoplasm of the lymph vessels. Stasis of chyle in the region of the thoracic duct does not play a role.

3 Clinically there is swelling of the legs and the external genital organs (elephantiasis). The skin shows rupturing yellowish white vesicles which discharge chyle and a chyle fistula develops which often threatens life.

4 The treatment indicated is interruption of the direct connection between the thoracic duct and the peripheral lymph vessel system by laparotomy.

5 A similar anomaly has been seen in the region of the cervical trunk. The condition probably occurs also in the subclavicular trunk and the other afferent lymph vessels of the thoracic duct.

GLASS (Z)

#### Gow A E. Some Disorders of the Lymph Glands *Brit M J* 1928 11 972

The author reviews the anatomy and physiology of the general lymphatic system and discusses the significance of lymph node enlargement in different portions of the body.

Local enlargements are usually the result of a local infection conveyed by the lymphatics. A trifling wound may be the portal of entry. In some cases local enlargement of glands in the neck may be metastatic from an internal carcinoma or the beginning of Hodgkin's disease.

Generalized enlargement may indicate an infectious disease such as rubella or syphilis or a condition such as acute lymphatic leukaemia. The patient with chronic lymphatic leukaemia may consult the physician for a swelling on one side of the neck. A blood examination will differentiate this condition from splenomyelogenous leukaemia. In lymphosarcoma the glandular groups tend to be unequal in size, rather hard and definitely fixed to the deeper structures. The author reports a case of this type in a woman of twenty years which was apparently cured by X-ray irradiation.

The author describes in detail the usual picture of Hodgkin's disease and urges surgeons to send material from cases of this disease to St Bartholomew's Hospital London where a special investigation of the condition is being carried on.

WILLIAM J PICKETT M D

#### Coley W B. End Results in Hodgkin's Disease and Lymphosarcoma. *1: Surg* 1928 LXXVIII 641

Coley states that in his opinion lymphosarcoma and Hodgkin's disease which are usually regarded as distinct conditions are quite closely allied

etiologically and bear such a close resemblance to each other that in some instances it is impossible to differentiate them either clinically or histologically. While typical Hodgkin's disease can be differentiated from typical lymphosarcoma there are atypical cases which may be considered either as distinct processes with a distinct etiology or as variations of a single disease. Coley therefore agrees with Minot and Isaacs who include them all in a general group to which they have given the name lymphoblastoma.

The systemic nature of Hodgkin's disease has been recognized by many since Gowers described the lesions as involving not only the lymph nodes and spleen but also the skin, intermuscular tissues, bones, brain, soft palate, pharynx, tonsils, esophagus, stomach, intestines, pancreas, peritoneum, thyroid, thymus, trachea, lungs, pleura, diaphragm, pericardium, heart muscle, suprarenals, kidneys, testes and ovaries. Recently attention has been called to the fact that the disease involves the nervous system and the skeletal system. In 36 cases of Hodgkin's disease Ginsburg found involvement of the nervous system in 10 (27.7 per cent). Hodgkin's disease of the bone marrow has long been recognized. Ziegler in 1911 stated that from 30 to 40 per cent of all cases of Hodgkin's disease show bone marrow involvement while Summers believes that the bone marrow is involved in every case. Only recently however has it been recognized that in certain cases of Hodgkin's disease very definite metastatic tumors of the bone may be found. Coley has had cases of direct invasion of skeletal bone. In 1 of these there was involvement of the frontal and occipital bones. All of the lesions disappeared under treatment with large daily doses of the Coley toxins.

With regard to the clinical manifestations of Hodgkin's disease the author states that as a rule an enlarged gland appears on one side of the neck and soon thereafter there is enlargement of other glands on the same side. A few weeks or months later similar enlarged glands appear on the other side of the neck and still later in the axilla and groin. Not infrequently the spleen or liver or both are enlarged. The glands are freely movable and seldom fused. They are firm but less hard than a carcinomatous gland and less soft than a lymphosarcoma. In a number of cases, especially after generalization has occurred there may be an irregular temperature as high as 102 to 103 degrees F and lasting for weeks. There is nothing of diagnostic value in the blood findings but in the later stages of the disease there is usually a severe and progressive anemia.

Coley believes that Hodgkin's disease and lymphosarcoma are infectious processes and that all carcinomata and sarcomata are due to the irritation of an infectious agent.

There is no record of a spontaneous cure of Hodgkin's disease. The duration of the condition varies in different cases and may be modified by

the type of treatment. The effect of treatment gradually diminishes but life has been definitely prolonged by drugs such as arsenic and by the roentgen rays, radium and the toxins of bacillus prodigiosus and erysipelas.

Burnam reported a series of 173 cases treated with radium. In the majority radium alone was used. One hundred and ten of the patients died from the disease. Of a group of 28 who were classed as clinically cured, 2 died from apoplexy nine years after the first observation. The average duration of life in this group was six years and three months.

Stone summarizes his report of 200 cases treated with radium and the X ray as follows:

1. The X ray and radium are only palliative agents in the treatment of Hodgkin's disease.

2. Palliation can be accomplished in 60 per cent of the cases and complete restoration of health with or without complete regression of the tumors may result in about 32 per cent.

3. Restoration of health will often last for a year and rarely two, three or four years.

4. Palliation if it is to follow will begin after the first or second treatment.

5. Life may be prolonged one or two years.

Desjardins and Ford of the Mayo Clinic in reviewing the end results in 135 cases also noted palliation from X ray and radium treatment.

The value of surgery in Hodgkin's disease and lymphosarcoma has not as yet been definitely established. Many have found as has Coley that early removal of isolated growths followed by irradiation or the use of toxins has definitely prolonged life.

When multiple glandular enlargements are present or generalization of the disease has occurred irradiation cannot be effective. In such cases Coley uses the toxins of erysipelas and bacillus prodigiosus. Of the patients treated with toxins alone 10 per

cent recovered and remained well for from three to twenty years.

Coley reports several cases in which surprising results were obtained with his toxins.

In the last thirteen years he has had 58 cases of lymphosarcoma and 39 cases of Hodgkin's disease. Of the 39 patients with Hodgkin's disease only 3 remained well for more than three years and one of these died in the fourth year. Of the patients with lymphosarcoma 6 remained well for from three to ten years. Of 19 who remained well for from five to twenty two years 16 were treated with toxins alone and 3 with toxins and the X rays. Better results were obtained in a previous series (before 1914) when surgery and toxins were used. Coley believes that the less favorable results obtained in the more recent series may be accounted for by the fact that when they first came under observation most of the patients in the second series were in a much later stage of the disease, the condition having become widely generalized and having been previously treated by radiation.

In conclusion Coley says that lymphosarcoma and Hodgkin's disease should no longer be regarded as absolutely hopeless. The tumors are usually radiosensitive and are responsive also to treatment with mixed toxins of erysipelas and bacillus prodigiosus. It seems logical to use the combined treatment thereby securing the local effect of radiation (radium or X ray) and the systemic effect of the toxins which have the power to reach hidden and remote glands beyond the reach of radiation. The treatment should be kept up periodically for a number of years. In from 10 to 15 per cent of the cases of lymphosarcoma relief should be obtained for at least five years. In typical Hodgkin's disease the prognosis is still very unfavorable and permanent control can be expected in only a very small number of cases.

MANUEL I. LICHTENSTEIN, M.D.

# SURGICAL TECHNIQUE

## OPERATIVE SURGERY AND TECHNIQUE POSTOPERATIVE TREATMENT

Binger M W Judd E S Moore A B and Wilder R M Oxygen in the Treatment of Postoperative Bronchopneumonia *Arch Surg* 1928 xii 1047

Observations made in 95 cases of postoperative pneumonia in most of which the diagnosis was confirmed by roentgenograms strongly indicate that the oxygen used in their treatment resulted in the saving of life. The oxygen was administered by means of the Barach Roth tent. The results were best when the treatment was given early.

In experiments on guinea pigs pneumonia was produced by the intratracheal injection of relatively benign streptococci. Treatment with oxygen immediately after operation was found to reduce the mortality 50 per cent.

In a group of surgical cases in which there was reason to fear the development of postoperative pulmonary complications oxygen treatment was started immediately after the operation. The incidence of pulmonary infection in this group was practically nil.

## ANTISEPTIC SURGERY TREATMENT OF WOUNDS AND INFECTIONS

Allen A W and Wright I S The Bactericidal Properties of the Solution S T 37 (Liquor Hexylresorcinolis 1:1000) *Irel Surg* 1928 xii 834

In May 1927 Leonard and Feiler described a new antiseptic liquor hexylresorcinolis 1:1000 known as S T 37. This antiseptic is a practically colorless odorless limpid fluid with a sweetish taste which contains 1 mgm of crystalline hexylresorcinol per cubic centimeter of solvent consisting of 30 per cent glycerin and 70 per cent water. It is claimed to be bactericidal to visible bacterial suspensions in fifteen seconds or less non-toxic non-irritating chemically stable bactericidal in high dilution very penetrating non-corrosive non-staining and free from disagreeable odor.

It has the lowest surface tension combined with the greatest bactericidal action of any of the many alkalinized resorcinol derivatives in various solvent solutions that were investigated. Its name signifies a solution with a surface tension of 37 dynes per centimeter.

It is not effectively bactericidal for bacillus pyocyaneus within forty-eight hours but destroys the staphylococcus aureus within ninety minutes and the streptococcus hemolyticus in less than fifteen minutes. It is stable and active in the spinal fluid.

HOWARD A MCKNIGHT M D

Rice T B Bacteriophage in Suppurative Conditions *J Indiana State M Ass* 1928 xii 509

The author reports the results of the use of bacteriophage filtrates in 150 clinical cases. Among the conditions represented were carbuncles and boils all of which showed definite improvement after the first application. In most cases relief was quite prompt. Early boils regressed later ones became liquid and discharged the core. The bacteriophage was applied locally or injected into the tissues around the boil.

In cases of staphylococcus cellulitis the pain ceased promptly and marked improvement was noted in twenty-four hours. In cases of osteomyelitis the results differed. If necrotic bone was present its removal was necessary before the treatment caused much benefit. Bed sores were treated with the bacteriophage filtrates with marked success. In certain cases the sores were healed although the patient died of the primary lesion. The bacteriophage has no effect upon the body cells. Closure of the wound must depend upon the presence of healthy granulation tissue.

In cases of leg ulcers the treatment caused prompt cessation of the foul discharge and the appearance of healthy granulations. Suppurating wounds also responded very favorably. In fact the more pus there was in the wound the better results. This was true also in cases of abscess cavity. Of eleven cases of appendiceal abscess the only one that failed to respond to the treatment was that of a patient who was moribund and showed cyanosis of the lips and finger tips. Two patients with staphylococcus septicæmia eventually died. Cases of acne vulgaris have been treated sometimes with success and sometimes with failure.

The bacteriophage is effective in all staphylococcus lesions if there is no bone involvement and the blood stream is not invaded. The stock preparation seems just as effective as the bacteriophage prepared against an autogenous culture. Efforts are being made to have the material manufactured in sufficient quantity for general distribution.

WILLIAM J PICKETT M D

## ANÆSTHESIA

Hornor A P and Gardenier C V A Means of Intercepting Explosions in Anæsthetics *Anes & Anal* 1928 vii 371

The authors report attempts to eliminate the hazard of explosion in the use of gas anæsthetics. Most of the work was done with ethylene. The object was to dispose of the gas expired by the patient in such a way that vapors leaving the face mask were neither inflammable nor explosive when

mixed with air or oxygen. Attempts were made to absorb the ethylene as it left the mask to change the chemical reaction with the gas as it left the mask, and to dilute the gas after its expiration with nitrogen or carbon dioxide. None of these methods proved satisfactory. The solution of the problem was found to be interception of the explosion between the point of origin and the patient. This requires extreme rapidity of action by the intercepting medium as ethylene explosions attain a maximum rate of propagation of about one and one half miles per second.

As no mechanical check valve can act with such speed, the explosion itself was used as the force for the check valve. The authors constructed a cylindrical tube divided into two chambers by a partition, a portion of which was made up of two very thin diaphragms separated by a layer of fluid. Attached to the lower diaphragm was a valve which could be seated in  $1/5000$  of a second. A coil led from the upper to the lower chambers. When an explosion occurred at the upper end of the cylinder a fine mesh screen dissipated some of the explosive force while the remainder ruptured the lower diaphragm, thus shutting off the valve to the outlet. In the meantime the burning gas was traveling from the upper chamber of the cylinder to the lower by way of the coil, but as the valve had already been closed, no propagation of explosion could be transmitted through the outlet.

A mask incorporating the same principles is suggested for practical use.

GEORGE R. McCLURE, M.D.

Romberger, F. T. Clinical Studies and Chemical Analyses of Rebreathed Mixtures. *Ann. Surg.* 1923, vol. 33, 4.

The experiments reported in this article were begun by endeavoring to keep a patient asleep by using only his own rebreathed gases and adding oxygen as needed. As this attempt was successful, it furnished a starting point for determinations of the percentage of actually breathed gas mixtures in the bag and for a comparison of this percentage and the percentage of gas fed with the clinical data.

In the first experiment the rebreathing was continued for twenty three minutes without nitrous oxide and the carbon dioxide in the bag rose to 10 per cent. The anesthesia differed from the ordinary nitrous-oxide oxygen anesthesia as there was extreme pinkness of the skin with profuse perspiration, a rapid pulse and accelerated respiration.

In Case 2, without rebreathing, no accumulation of carbon dioxide developed in the long tubing.

In Case 3, in which a rebreathing bag with an adjusted expiratory valve was used, 5 per cent carbon dioxide was found in the breathing tube.

In Case 4, the anesthesia was induced with nitrous oxide and ethylene in equal parts, but analyses of the breathing bag showed nitrous oxide 19 per cent and ethylene 63 per cent, this fact indicating that nitrous oxide is the more absorbable.

In Case 5, 40 per cent carbon dioxide was given to determine whether such a high percentage invariably produces dilatation of the pupil and a stationary eyeball, but only 31 per cent could be recovered from the bag.

GEORGE R. McCLURE, M.D.

# PHYSICOCHEMICAL METHODS IN SURGERY

## ROENTGENOLOGY

Sear H R. Osteitis Fibrosa and Osteitis Deformans. *Med J Australia* 1928 ii 516

The author holds that osteitis fibrosa and osteitis deformans tend to merge into one another and cites the opinion of other authorities regarding this point. He believes that these conditions are unusually common in Australia. He has seen over 200 cases of osteitis deformans.

The essential histological features are (1) disappearance of the original bone (2) the substitution of a vascular connective tissue for the original bone and its intertrabecular marrow and (3) the formation of new bone from this connective tissue.

Various classifications adopted are given.

Röntgenographically Sear classifies the subgroups of osteitis fibrosa as (1) solitary cysts with or without trabeculation (2) multiple cysts (3) a somewhat cystic condition sometimes involving one bone sometimes many which on the one hand approaches the cyst either single or multiple and on the other passes through varying degrees of osteosclerosis until it approaches more closely the type of lesion seen in osteitis deformans (4) a condition characterized by a finely stippled pitted or striated appearance found most commonly in the jaws. Each of these groups is described in detail and their differences from lesions resorbing them are cited.

The third type especially appears strongly allied to osteitis deformans. The author states that although he has never seen the woolly osteosclerosis typical of osteitis deformans in osteitis fibrosa he has observed cases of the former with no or atypical skull changes and others have reported similar changes in cases of osteitis fibrosa.

ADOLPH HARTUNG M D

Burrows M T, Jorstad L H and Ernst E G. The Chemical and Biological Changes Induced by the X Rays in Body Tissues. *Pedology* 1928 xi 30

The authors state that the X rays not only destroy cancer cells but may induce cancer. Cancer may be induced also by coal tar and other lipid solvents. This phenomenon appears to be due chiefly to a disturbance of the balance of vitamins in the body. In experiments on rat the authors noticed that the animals living on dog biscuits alone succumbed to the X ray irradiation rather quickly whereas those given either cod liver oil or milk survived for a considerable time.

In the treatment of cancer with the X rays both the cancer cell and the surrounding tissues are affected. One of the effects of the X rays on the

tissues seems to be the removal of the normal lipid content. This action may be the chief factor in the destructive action of the X rays on the cancer tissue. PAUL C COLONNA M D

Mottram J C. The Action of Radiation on the Blood Supply of Tumors. *Lancet* 1928 cccv 960

Mottram described a series of experiments performed upon various tumor grafts both *in vitro* and *in vivo* which indicate that quickly growing tumors are more radio sensitive than slowly growing tumors whereas *in vitro* both types of tumor have the same radiosensitivity.

He explains this by the effect of radiation upon the blood supply. In quickly growing tumors the cells are abundantly and closely packed around the blood vessels without any intervening supportive tissue. Accordingly the swelling of the cells following radiation produces greater occlusion of the blood vessels thereby more effectively reducing the nourishment of the tumor and more rapidly destroying it.

In radiosensitivity the amount of supportive tissue is more important than the rate of growth of the tumor. CHARLES H HEACOCK M D

## RADIUM

Forsell G. Therapeutic Methods and Results at Radiumhemmet. *Brit J Radiol* 1928 i 374

Forsell briefly describes the organization of Radiumhemmet at Stockholm and reviews the results obtained at that institution in which cancers and tumors are treated principally with radium. The hospital was founded in 1910 and is supported by the government. At first only inoperable tumors were treated with radium. Later as the result of improvement in the technique radium irradiation was used in borderline cases and today an ever increasing number of operable cases are treated with radium or a combination of radium and surgery. Such treatment is given most frequently for cutaneous cancer, cancer of the lip, uterus, thyroid, oral cavity and vulva and certain sarcomata. Breast cancer is treated by surgery alone whenever possible otherwise by surgery and radiotherapy. All cancers of the digestive tract are treated surgically if they are operable.

The permanency of healing under radiological treatment has been sufficiently tested only in cases of cancer of the face, lip, oral cavity and uterus and sarcoma.

Of 207 cutaneous cancers of the face 142 (68 per cent) have remained healed over a period of ten years. If only the operable cases are considered the incidence of absolute cure was 78 per cent.

In cases of cancer of the lip a cure was obtained in 68 per cent of the whole number and 86 per cent of those which were operable.

In cases of cancer of the mouth a five year cure was obtained with radium in 18 per cent of the total number and 31 per cent of those in which the lesion was primary in the mouth. Surgery and radiotherapy gave a five year cure in 60 per cent of the cases.

In 500 cases of cancer of the cervix absolute healing was obtained in 22.4 per cent of the total number. If only operable and borderline cases are considered the incidence of five year healing was 46.2 per cent. In the inoperable cases a five year cure resulted in 16.7 per cent. In the cases of cancer of the body of the uterus absolute healing resulted in 43.5 per cent of the total number and in 60 per cent of those which were operable.

Of 543 patients treated for sarcoma one third were free from symptoms three years later. Of 38 patients with primary tumors who were treated with radium only 24 per cent remained free from symptoms. Of 151 patients with sarcoma who were treated with surgery and radium two thirds have remained free from symptoms.

It has been found that in cases of tumor in which there is a fair chance of obtaining healing by radium irradiation the duration of the healing so obtained is in every way comparable with that obtained by surgery. The incidence of recurrence is lower following primary healing obtained by radium irradiation than following primary healing obtained by surgery. The period of latency is much the same after both types of treatment. Recurrences usually appear during the first and second years. After the fifth year they are rare but they have been known to occur as late as the ninth year.

Primary healing was obtained in 1714 (38 per cent) of 4470 cases. In the 1670 cases remaining after exclusion of those representing the most favorable and the most unfavorable forms of cancer the incidence of primary local healing was 0

per cent. Of 3354 cases in which the treatment consisted of radium irradiation alone primary local healing was obtained in 1714 (51 per cent). In the most favorable cases the incidence of primary healing ranged from 60 to 90 per cent.

A. JAMES LARKIN M.D.

#### Lacassagne A. The Direct and Indirect Action of Radiation on Cancer Tissues. *Radiology* 19: 8 31 393

The effects of radiation on the tissues have been attributed to (1) a direct action (2) an indirect action and (3) an indirect general action.

By direct action is meant a disturbance of equilibrium within the molecular arrangement of the cell which results in the death of the cell.

By indirect action is meant changes brought about in the radiated zone such as circulatory disturbances and sclerosis which affect the nourishment of the cells.

By indirect general action is meant the liberation into the circulation of a toxin or hormone which serves to stimulate certain general organic reactions.

The author discusses these three theories and the various experiments which seem to support the second and third. He believes that as regards their reaction to destructive doses of radiation cancer cells should be placed in the same class as normal tissue.

A comparison of the statistics published from the principal clinics in which local destructive doses are given exclusively and those in which the attempt is made to obtain both direct and indirect action does not favor the latter method.

The author emphasizes that in the destruction of neoplastic cells by radiation the importance of preserving the normal tissue must be borne in mind. The chief requirement for successful results seems to be the administration to all of the cancer cells of the strongest dose which is compatible with the integrity of healthy tissue.

CHARLES H. HEACOCK M.D.

## MISCELLANEOUS

### CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Martin W. and Shore B. R. Juvenile Gangrene  
*Ann Surg* 1928 lxxxviii, 23

The authors report 4 cases of juvenile gangrene and review the literature on the condition. The first case was that of a boy four and a half years of age who was suffering from an acute generalized infection which began with a cough and difficulty in breathing and swallowing. At the end of the first week pain began over the left ankle and heel. The skin became blue and in the course of the next two weeks turned black. Similar changes took place over the tip of the left ear and on the prepuce but only the ear sloughed. The foot sloughed at the ankle joint at the end of two months. The child recovered from the acute illness. Two and one half years later the stump was fashioned for weight bearing. When the child was re-examined at the end of five years he was found to be well developed except for absence of the left foot and the tip of the left ear.

The second case was that of a boy aged six years who developed gangrene of both legs and one hand following an attack of diphtheria.

The third case was that of a boy seven years old who had widespread chronic tuberculosis. He had been chronically ill for six months with enlargement of the abdomen and a cough when the left foot and the lower part of the left leg became blue, swollen and tender. Gradually this gangrenous area became deep black and separated from the living tissue. Four months after the onset of the condition when the soft parts had sloughed through to the bone an amputation was done through the thigh. The parts bled freely. Six months later the boy was still alive and the stump was healed although the tuberculosis was more advanced. A section through the main vessels in the amputated leg showed endarteritis confined largely to the intima. One of the vessels showed evidence of canalization as though it had been thrombosed.

The fourth case was that of a boy of fourteen years who had an indolent perforating ulcer on the ball of the great toe and in the course of three weeks developed gangrene of the tip of the second toe and a perforating ulcer of the sole of the foot. The anterior portion of the foot was amputated. The stump healed soundly. The boy is well today and free from pain.

In 1904 Barrand reported 103 cases of gangrene of the extremities occurring in persons under thirty years of age following an acute infection.

Kautz in 1914 reported an additional 20 cases 2 of which were seen in his own practice. In one of

the latter gangrene of both feet developed after menses in the other there was gangrene of both feet and one hand but the cause could not be determined.

The autopsy findings show that according to the etiology the cases of gangrene reported may be divided in 4 groups: (1) those in which the gangrene followed an embolus, the primary thrombus being in the heart or aorta; (2) those in which there was a primary thrombus in one of the large vessels supplying the extremity; (3) those with evidence of local arteritis in the vessels above the gangrenous area; and (4) those in which no change could be found in the vessels up to the line of demarcation and there was presumably a capillary thrombosis which had passed on to massive tissue death.

To account for certain cases of gangrene the influence of infection on the occurrence of thrombosis in the heart, large vessel and capillaries must be studied. The influence of toxins on the endothelial lining of vessels, sluggishness of the blood stream with the deposition of blood platelets, spasm of vessels and blocking of the circulation by emboli or thrombi may play a part in the development of this condition.

In nearly all of the reported cases the gangrene occurred during the terminal stages of a generalized infection or after such an infection.

Experiments by the authors on rabbits showed that the minute vessel of the extremities can be so altered by the local injection of adrenalin combined with intravenous injections of streptococci that capillary thrombosis followed by gangrene occurs. Spasm with diminished blood supply to the part predisposed to infection.

In many of the cases reported symmetrical gangrene occurred but a diagnosis of Raynaud's disease was unwarranted. In children symmetrical gangrene is not an entity.

MANCEL E. LICHTENSTEIN, M.D.

Barber H. W. and Ortel G. H. A Clinical and Biochemical Study of Allergy. *Lancet* 1928 cxxv, 1009-1004.

The authors report that in various manifestations of the allergic state certain phenomena have been demonstrated to occur with remarkable constancy and some of them have been noted by other investigators in experimental anaphylaxis and in serum sickness which is generally admitted to be of anaphylactic origin.

Whether the allergic state is intermittent (as in certain cases of urticaria, angioneurotic edema, asthma or hay fever) or more or less chronic with periodical exacerbations and remissions (as in Besnier's prurigo and infantile eczema) there can



be recognized a definite cycle of events corresponding to the preparoxysmal stage the actual paroxysm and the postparoxysmal stage. In this cycle the most striking features are (1) a rise in the amino acid content of the blood (2) a fall in the chloride content particularly of the corpuscles due presumably to the taking up of chloride by the tissues (3) chloride retention excretion of chloride in the urine being diminished or absent during the paroxysms and increased after the paroxysms, at which time the chloride content of the blood may also be raised (4) a rise in the urinary excretion of ammonia the ratio of free acid to ammonia combined acid being altered often very strikingly (5) a deposition of urates in the urine in the preparoxysmal or paroxysmal stage (6) an intense ether reaction during the periods of active symptoms and (7) diuresis with increasing acidity and sometimes marked alkalinity of the urine in the postparoxysmal stage.

In a large percentage of the cases examined so far there was a positive van den Bergh reaction of the biphasic type.

The findings in a case of anaphylactic shock a case of multiple scalds and cases of definite hepatic disease were similar.

The authors believe it possible that the increase in the amino acid content of the blood results partly from (1) the increased endogenous katabolism that occurs in anaphylactic and allergic reactions as shown by the increased formation of creatinine (2) the relative temporary hepatic insufficiency caused by the damage to the liver cells as evidenced by the positive van den Bergh test and (3) the interaction of the antigen and the defense ferments of Abderhalden whereby amino acids are formed. In any case the positive van den Bergh reaction the raised amino-acid content of the blood and probably the increased ammonia excretion the precipitation of urates and the ether reaction in the urine are indicative of a disturbance of hepatic function. It is likely that the increased ammonia excretion and the temporary retention of chlorides are protective mechanisms.

In many cases of allergy regulation of the diet according to the authors interpretation of these findings and the internal administration of ammonia and glucose have proved of definite value.

EMIL C. ROBERTS, M.D.

MacCarty W. C. The Cancer Cell in the Practice of Medicine. *Radiology* 1928 11 39.

Until recently gross appearance histological patterns and the structural status of the basement membrane of tumors constituted the only criteria on which diagnostic and prognostic judgments might be based. These criteria have served well in the recognition of advanced malignancy but are insufficient for the diagnosis of some of the smallest growths.

Even the smallest cancers are sometimes associated with lymph node involvement. We must therefore begin to attack radically all conditions that show any analogy to cancer. With our present

knowledge the only practical procedure is to determine as soon as possible whether a cytological condition is dangerous or not.

For twenty one years the author has sought criteria for the early diagnosis of malignancy and beginning in 1917 he described three cytological conditions associated with chronic irritation in the mammary acinus the gastric tubule the prostatic acinus and the skin. An appearance suggesting malignancy was named secondary cytoplasia. It was never called cancer and no radical operation was ever advised for it.

The malignant or cancer cell is ovoidal or spherical and has a large nucleus and one or more large nucleoli. As compared with the cytoplasm of the adult or reparative regenerative cell the cytoplasm of the malignant cell is less dense and the nucleoplasm is denser and more granular. These characteristics can be seen in perfectly fresh sections stained or unstained and in properly stained fixed sections. They have not yet been seen in tissues embedded in paraffin or celloidin.

The morphology of the malignant cell is so characteristic that an expert cytologist thoroughly familiar with it and with the high power details of every cell in the human body should be able to diagnose cancer from a single cell in the sinus of an inflammatory lymph node.

The malignant cell is a parasite. It has as definite a place in medicine as the tubercle bacillus or the spirocheta pallida. Its presence should be investigated when a chronic local ulceration or tumor-like condition does not heal or disappear in a few weeks. If possible the affected area or mass should be excised for diagnosis.

The more the author sees of small cancers the more he is inclined to believe that we will soon be compelled to perform a radical operation for secondary cytoplasia. As this condition can be recognized best in fresh tissue the diagnosis should be made by biopsy at the time of the exploration. By early diagnosis made in this way the demand for early treatment can be successfully met.

Wood F. C. Cancer Biology and Radiation. *Radiology* 9 81 333.

When Warburg found that under anaerobic conditions tumor cells are able to split glucose into lactic acid it was supposed for a time that a long sought characteristic difference between tumor cells and normal cells had been found but it was soon discovered that retinal epithelium leucocytes embryonic structures and placental tissue have the same power.

In animals kept in an atmosphere low in oxygen the disappearance of tumors has been observed but is not constant. Insulin phloridzin and other administration of large quantities of glucose seem in the last analysis to have no effect upon tumor growth. Moreover it appears that the Rous tumor is due to some chemical substance which acts as a stimulant to the tissues of the host.

and that in mammalian tumors conditions are quite different.

The morphological changes which accompany the destruction of tumor cells by the X and Y rays are not characteristic of these radiations but an effect exerted also by other physical agents such as heat and cold. Chemicals and ultraviolet light have a similar effect upon the nuclei of the cells. The laws governing the destruction of cells by radiation are the same as those governing the hemolysis of red cells, the destruction of bacteria by disinfectants and the death of a standard human population. Biological dosage may be easily estimated by subjecting drosophila eggs to radiation. The results can be read in forty eight hours.

Blair Bell has shown experimentally that colloidal lead in the tissues acts directly on the cells while inert substances such as sulphur, carbon and colloidal gold have no such action. In the treatment of certain tumors the author has found that when lead is administered previous to irradiation the efficiency of the irradiation is increased by 30 per cent. This is due not to the secondary rays but to a toxic effect on the tumor cells.

Vaccines sera and non specific substances have been tried in the treatment of cancer without uniform success.

In the author's opinion a fertile field for investigation regarding cancer treatment is the study of combinations such as lead and an anti human serum. The lead might affect one portion of the cell while the serum might affect another and when X ray irradiation to the limit is added a certain number of tumors might be affected favorably.

In conclusion Wood states that the technical problems of killing the tumors without injuring the patient and determining which tumors will yield to irradiation and which will not must be better solved before radiotherapy becomes a scientific method.

GEORGE A. COLLETT M.D.

**Sturm F.** The Simultaneous Presence of Recent Foci of Tuberculosis and Disseminated Carcinoma Metastases (Ueber gleichzeitiges Bestehen frischer tuberkuloöser Herde und disseminierter Carcinommetastasen). *Deutsche Zeitschrift für Chirurgie* 1923 cxix 406.

According to Rohitansky there is a definite antagonism between tuberculosis and cancer and according to the findings of Centami and Rezzesi in investigations on animals cancer cells and tubercle bacilli have an injurious effect upon each other. However besides this antagonism and the constitutional resistance there are numerous other factors which are responsible for the rarity of the association of tuberculosis and cancer in the same organism.

The author reports a case in which a latent tuberculosis became activated in the presence of numerous metastases from an advanced carcinoma of the breast and caused death in three weeks from tuber-

culous pleurisy and peritonitis. Before the activation of the tuberculosis the patient had remained in relatively good condition for three years despite the clinical and roentgen demonstration of cancer metastases. On histological examination the cancer nests were found to be embedded in considerable connective tissue.

In this case there was not only marked resistance to carcinoma invasion but also excellent power of repair. A spontaneous fracture of the neck of the femur had re-united despite invasion of the fracture site by metastasis.

The author suggests that the natural resistance of the body to carcinoma might be increased by such therapeutic measures as a change of diet, environment and climate, treatment with insulin for the hyperglycemia which is associated with carcinoma and large doses of arsenic. He states that when the organism is badly damaged by carcinoma it evidently becomes resistant to tuberculosis whereas it may be susceptible to this infection when the metabolic processes are only slightly injured by the cancer.

RAPP (Z)

#### GENERAL BACTERIAL PROTOZOAN AND PARASITIC INFECTIONS

**Taylor J. F.** *Bacillus Proteus* Infections. *J. Path. & Bacteriol.* 1928 xxxi 897.

Taylor states that the name *Bacillus proteus* should be restricted to a well defined group of non-sporing gram negative pleomorphic proteolytic and hemolytic bacilli which produce a spreading or creeping growth on solid media, ferment dextrose and saccharose and occasionally maltose but do not ferment lactose, mannite or dulcitate, may or may not form true indol from peptone water and in milk form a transient clot which is very rapidly peptonized.

This article reports morphological, cultural, biochemical and serological studies of fifty three strains recovered from human sources, all of which strains showed the characteristics enumerated. Only three fermented maltose and only the same three strains produced true indol.

Agglutination tests showed variations between the strains and absorption tests seemed to show definite differences.

In man the *Bacillus proteus* may produce severe infection or exist as a harmless saprophyte in the tissues, body fluids or excreta. An attempt has been made to classify the strains as pathogenic and non pathogenic on the basis of the history, clinical course and bacteriological findings in each case. Twenty two strains have been classed as pathogenic, twenty four as non pathogenic and seven as doubtful.

No classification into pathogenic and non pathogenic strains could be made by the laboratory methods employed and no differences were found between strains recovered from urinary, faecal or other sources.

*Bacillus proteus* \ 19 of Weil and Felix was found to differ serologically from the fifty three strains of *Bacillus proteus* studied by the author but otherwise resembled them closely

JOHN J. MALONEY MD

Francis E. Tularemia *J Am U 1st* 1928 vol 1155

The author describes 4 clinical types of tularemia based on a study of 679 case reports

1 The ulceroglandular type manifested first by a papule of the skin followed by an ulcer and enlargement of the regional lymph glands

2 The oculoglandular type with conjunctivitis and enlargement of the glands

3 The glandular type with no primary lesion at the site of infection but with enlargement of the regional glands

4 The typhoid type with no primary lesion or enlargement of glands

The infection may result from the handling or skinning of rabbits the dissection of laboratory animals or the bite of the tick. No case has been reported of the spread of the disease from man to man by contact. The period of incubation varies from one to ten days and averages three days. The onset is sudden and manifested by headache vomiting chills and fever.

In tularemia of Type 1 the pain begins in the regional lymph nodes. These nodes become enlarged and tender with often a redness of the skin which may extend in streaks to the site of the lesion. Twenty four hours later the site of the lesion is evidenced by an inflamed and painful papule which breaks down discharges a plug of necrotic tissue and forms an ulcer. The lymph nodes may suppurate.

In tularemia of Type 2 the eye manifests irritation of the conjunctiva redness edema of the conjunctiva and swelling of the lids and there is swelling with tenderness in the preauricular parotid and submaxillary lymph glands. Small ulcers appear in the conjunctiva of both lids. This type may be mild or severe. It may progress to blindness and even to death.

Tularemia of Type 3 causes enlargement and tenderness of the epitrochlear and lymphatic lymph glands but no primary lesion.

In the typhoid type fever is the outstanding feature. This condition has often been considered to be typhoid until the physician has been impressed by the negative Widal test with agglutination of the blood to the bacterium tularensis.

In all types there is fever characterized by an initial rise a remission of two to three days and a secondary rise. Leucocytosis is present to the extent of about 16,000. A skin eruption was noted in 32 cases and varied from a rash to a maculopapular eruption. Convalescence is slow requiring about a month. In the 679 cases reviewed there were 24 deaths. The fatal cases terminated in bronchopneumonia lobar pneumonia or meningitis.

Important aids in the diagnosis of the condition are a history of rabbit handling or tick bite a primary papule followed by ulceration persistent glandular enlargement in regional nodes and fever of from two to three weeks duration. The existence of the disease can be proved by agglutination of the bacterium tularensis by the patient's serum or by isolation of the bacilli from the guinea pig after inoculation of the animal with material from the primary lesion. Agglutinins may be demonstrated after the first week of the disease and often remain present in the serum for years after the patient has recovered from the illness. Human tularemia may show cross agglutination of the brucella abortus and brucella melitensis. This is much slower than agglutination of the bacterium tularensis. The reverse also is true. Bacterium tularensis can be isolated from man only after animal inoculation with material from the lesion prepared and injected subcutaneously. Necropsy on the animal will show gray granular caseation of the lymph nodes and white necrotic foci on the spleen. Material from the dead animal rubbed on the shaven abraded skin of another guinea pig will bring about the transfer of the disease. Culture of bacterium tularensis may be acquired by inoculation of blood dextrose cystine agar with heart blood or spleen and liver substance from the dead animal.

The author reviews notes on the lesion in 38 cases of skin eruption and subcutaneous nodes. There are also case histories on 24 fatal cases.

WILLIAM J. PICKETT MD

Baroni B. Experimental Actinomyces (Actinomyces perimentale) *Arch Ital Dis Ch* 1938 vol 529

Baroni made a number of experiments with regard to actinomyces infection using the strain actinomyces asteroides which D. Agata had isolated three years previously from a case of actinomyces of the forearm. Having found that the strain had lost some of its virulence the author increased its virulence so that it caused a florid infection in rats.

In all eighty nine animals were inoculated—eighteen white rats ten gray rats twenty eight guinea pigs twenty nine rabbits and four cats. Broth cultures grown preferably on Polivcoi agar were used. The inoculation was made by injection into the jugular vein in guinea pigs and rabbits by intracardiac injection in rats by injection into a branch of the mesenteric vein in a guinea pig and rabbit to bring about immediate infection of the liver by intraperitoneal injection in some of all the species of animals by subcutaneous injection in rats and rabbits by epidermal injection in rabbits and by intratesticular injection in guinea pig rabbits and rats.

Injection into the jugular vein and intracardiac inoculation caused an acute generalized form of actinomyces localized particularly in the lungs and myocardium and associated with the formation of pseudotubercles. There were no nodules in the

spleen or in the lymphatic glands and few in the intestinal tract and the female genitalia. The male genitals and the liver were most affected. The process was frequently localized in the brain. Death was often spontaneous. For the first twelve days the nodules showed more exudative than proliferative phenomena but later proliferation predominated over exudation.

Inoculation into a branch of the mesenteric vein produced nodules only in the liver in the form of club-shaped structures.

Inoculation into the peritoneum brought about a disseminated process with a subacute or chronic course which terminated with healing in the rabbit and guinea pig and showed a tendency to extend in the rat and the cat. Rats and cats rarely showed a tendency toward spontaneous recovery. The structure of the actinomycotic granulomata was almost the same in all of the animals.

Direct inoculation into the testicle caused the development of abscesses. The micro-organisms were found rarely and only in the form of filaments.

Subcutaneous inoculation brought about encumbered abscesses which sometimes opened and healed spontaneously. The actinomycetes were generally in the form of filaments. The club-shaped structures differed morphologically from those found in other sites.

Epidermal inoculation was negative.

Following intravenous and intraperitoneal inoculation nodules were found in the kidneys.

Cultures made with the material from fresh nodules were positive whereas cultures made from older nodules were sometimes positive and sometimes negative.

The experiments prove definitely that inoculation of actinomycosis is possible. The author attributes the negative results obtained by some experimenters to special conditions of the actinomycetes at the time of isolation or inoculation.

AUDREY G. MORCAN, M.D.

### EXPERIMENTAL SURGERY

Gruzdev V. Injuries from Colored Pencils (Ubel er Tintenstiftverletzungen). *Vra bnaya ga* 1928  
In 209

After reporting two cases of conjunctival injury and two cases of cutaneous injury from colored pencils the author reviews his findings with regard to such injuries in experiments on animals. He

demonstrated that the anilin dye contained in the pencil point causes a connective tissue necrosis with the formation of a zone of infiltration and granulations stained with the dye suggesting a rapidly growing aseptic inflammatory tumor. He recommends immediate radical removal of the tumor.

Brook (Z)

Hillse A. Experimental Free Fat Transplantation. Histological Findings (Histologische Ergebnisse der experimentellen freien Fettgewebstransplantation). *Beitr. pathol. Anat. u. allg. Pathol.* 1928  
Irrut 592

In experiments with free transplantation of fatty tissue in rabbits and dogs to determine the hemostatic properties of such tissue in hemorrhage of parenchymatous abdominal organs the author had the opportunity to make a histological study of the changes occurring in the transplants. The serial sections yielded information regarding the fate of freely transplanted fatty tissue the microscopic changes occurring in it the part that perishes and the part that remains and whether and how regeneration of fatty tissue cells takes place. The conditions of the investigation were particularly favorable in that the transplantation of fatty tissue was made into a bed of a different sort of tissue and in a region that contained no fatty tissue. Moreover the fatty tissue transplanted onto wounds on the surface of the liver kidney or spleen was not subjected to changes in its static relations or to functional demands in the way of traction or pressure and its viability was favored by the rich blood supply of the organ.

On the basis of his investigations the author concludes that in general the transplant in the form of structurally differentiated fatty tissue is destroyed. However it does not perish in all of its constituents that is become necrotic. On the contrary a restoration of the old normal structure of fatty tissue takes place. As this occurs even in regions where no fatty tissue is present it is impossible for the young fat cells to be formed by substitution from similar tissue in the vicinity. In the experiments reviewed the regeneration resulted only when no functional demands foreign to the nature of the transplant were made upon it.

The author believes that clinical failures in the transplantation of fatty tissue are due to technical errors in the operation or absence of indications for the procedure.

FLESH THEBESILS (Z)

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MAY 1929

# International Abstract of Surgery

*Supplementary to*  
**Surgery, Gynecology and Obstetrics**

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Editorial Communications Should Be Sent to Franklin H Martin Editor 54 East Erie St Chicago  
Editorial and Business Offices: 54 East Erie St Chicago Illinois U S A  
Publishers for Great Britain Bailliere Tindall & Cox 8 Henrietta St Covent Garden London W C





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## EDITOR'S COMMENT

MOYNIHAN'S discussion of problems in gastric surgery (p 432) emphasizes a number of important points. He considers first of all that the terms 'gastroduodenal ulcer' and 'juxtapyloric ulcer' are misleading and should not be used. He mentions the differences in symptoms in behavior as regards perforation and hemorrhage, and in their tendency to undergo malignant degeneration as some of the definite indications of the essential differences between gastric and duodenal ulcers.

Although he agrees that gastric and duodenal ulcers may heal and remain healed under both medical treatment and surgical treatment he emphasizes the fact that before treatment is begun the presence of an ulcer must be definitely established and that the X-ray findings must be carefully considered to avoid misinterpretation. Medical treatment has won an undeservedly high repute for curing ulcer in cases in which no ulcer was present just as surgery has been brought into bad repute by the performance of gastro-enterostomy in cases in which no ulcer was present.

He does not believe that a large penetrating gastric ulcer can be healed in three weeks time as has been reported by MacLean for he has carefully watched cases which were found at operation to be too high for resection and in none of these did healing occur in less than four months. He also takes exception to Hurst's statement that penetrating and calloused ulcers may heal in four months for he has found that it may require as long as three years.

He calls attention to the modern tendency of surgeons to abandon short-circuiting operations because of the unsatisfactory results obtained (in 36 per cent of cases as reported by Lake) because of the expressed belief that gastric and duodenal ulcers are as likely to bleed after operation as before (Pannett) and because of the not infrequent occurrence of a postoperative jejunal ulcer (in 34 per cent of cases in which a gastro-enterostomy was performed for duodenal ulcer by Lewisohn). In answer to the first statement Moynihan expresses his belief that such operations are the most successful of all abdominal operations. It is essential however that the patient be properly prepared before operation that dental infection be eradicated that all oper-

ation the ulcer itself be dealt with by cauterization or otherwise, that the appendix be removed and the biliary tract and spleen carefully examined, and that after operation the patient should have a carefully regulated diet with restriction of tobacco alcohol and salt. Obviously, gastro-enterostomy should not be performed for lead poisoning tabes visceroptosis or achlorhydria. If bleeding continues after operation it must be assumed that the operation of gastro-enterostomy was done in cases for which it was unsuitable or that a duodenal ulcer was left untouched. Jejunal ulcer may appear as a postoperative complication of gastro-enterostomy even as late as nineteen years after operation but even after three fourths of the stomach has been removed free hydrochloric acid may still be found in the gastric contents so that the claim that secondary ulcers will not form after gastrectomy because of the anacidity following the operation has been repeatedly disproved. Already more than 100 cases of jejunal ulcer following gastrectomy for duodenal ulcer have been reported.

That gastro-enterostomies frequently require separation is true but in some of the many cases that Moynihan has separated were there unequivocal signs of an old or recent gastric or duodenal ulcer.

McCracken's review of seventy five cases in which a fractional gastric analysis was made on two or more occasions and in which 47 per cent of the patients showed a different curve when tested the second time (p 431) indicates the necessity for repeated examination of the gastric contents if one is to obtain a true picture of the secretory activity. Flint's report of the successful removal of the entire stomach for gastric carcinoma (p 435) and White and Jankelson's report of two cases of late intussusception of the bowel into the stomach after gastro-enterostomy (p 432) are also of particular interest in connection with the subject of gastric surgery.

Lemon's experimental studies of the function of the diaphragm (p 441) Phemister's discussion of the pathology and treatment of pyogenic arthritis (p 466) and New's description of the technique of a simplified two-stage larynx resection are a few of many other interesting reviews in this month's issue of the ABSTRACT.

# INTERNATIONAL ABSTRACT OF SURGERY

MAY 1929

## LANDMARKS IN SURGICAL PROGRESS

By IRVING S. CUTTFR, M.D., Sc.D., CHICAGO  
Dean Northwestern University Medical School

### LATERAL ANASTOMOSIS OF THE INTESTINE—PHILIP SYNG PHYSICK

THE surgical career of Philip Syng Physick, favorite American pupil of John Hunter and first American to become house surgeon in St. George's Hospital, exemplified the teaching of the Hunterian School. Closely associated with Hunter as resident pupil for a year and a half with an additional year spent as house surgeon, Physick absorbed his master's enthusiasm and fondness for experiment. Hunter made use of Physick's aptitude in this respect as is shown by a note in Hunter's Treatise on the Blood, Inflammation, and Gun Shot Wounds.



PHILIP SYNG PHYSICK<sup>1</sup>  
( 768 13 )

Many of these experiments were repeated by my desire by Dr. Physick now of Philadelphia when he acted as house surgeon at St. George's Hospital whose accuracy I could depend upon.

Few surgeons of a later day have done more to advance the methods of surgery than Philip Syng Physick. A study of his life and career impresses one with his ingenuity and resourcefulness as well as his sound knowledge of basic surgical principles. His fame rests upon his outstanding teaching ability and on numerous ingenious improvements in the practice of surgery. The two

volume Elements of Surgery<sup>2</sup> published by Physick's nephew John Syng Dorsey, is a carefully compiled and well arranged treatise drawn largely from Physick's lectures on surgery which he began to deliver to students shortly after his appointment as attending surgeon to the Pennsylvania Hospital. Physick inaugurated private lectures in surgery in 1800 and in 1805 his appointment as Professor of Surgery in the University of Pennsylvania gave him the widest possible field for the dissemination to eager American students of the surgery of John Hunter. Dorsey's Elements records scores of useful surgical

procedures inaugurated by Physick, many of which were unique. Physick greatly improved Desault's splint for the treatment of fracture of the femur, providing by this improvement better immobilization and insuring greater comfort for the patient. He advocated a successful method of stimulating bony union in cases of ununited fractures and was the first American to wash out the stomach by means of a gum elastic tube with syringe attached.<sup>3</sup> At the time he was unaware

<sup>1</sup> F. 1. d. 10. Philadelphia 1833

<sup>2</sup> John Syng Dorsey 1833

<sup>3</sup> F. 1. d. 10. 1833

the report (the case was published in the Elements of Surgery by John Syng Dorsey 1833)

of the earlier work of Alexander Monro Jr of Edinburgh who had advocated this procedure in his inaugural thesis published in 1797.<sup>1</sup> Apparently neither Physick nor Monro had noted the article by John Hunter in which was detailed the use of a flexible tube for the purpose of conveying food into the stomach. Hunter's case was entitled

A Case of Paralysis of the Muscles of Deglutition Cured by an Artificial Mode of Conveying Food and Medicines into the Stomach.<sup>2</sup> Physick greatly improved the instruments used in lithotomy in which he was an expert operator. One of Physick's famous cases is the operation for lithotomy which he performed in 1831 upon Chief Justice Marshall<sup>3</sup> who was at the time in his seventy fifth year. His improvements in the method of excising diseased tonsils and hemorrhoids are well known. Division of stricture of the urethra by means of a cutting instrument was first performed by Dr. Physick in 1795 with instruments of his own devising. He was a pioneer in experimental work on absorbable ligatures of animal origin. The second edition of Dorsey's Elements of Surgery<sup>4</sup> contains the following paragraphs:

Shortly after the first edition of this work was published Dr Physik suggested to the author the propriety of testing by experiment the value of an improvement he had long contemplated in the formation of ligatures—this was accordingly done and has resulted in the substitution of certain animal substances for the materials formerly employed

The first experiment made to ascertain the correctness of these opinions was the application of a buck skin ligature to a large artery in a horse. It restrained the bleeding and was discharged in a liquid state in two or three days.

Some time after this experiment Dr Hart shorne<sup>4</sup> employed ligatures of animal matter for securing the blood vessels in the human subject. He amputated a leg at the Pennsylvania Hospital and tied up the vessels with strips of parchment which were found to answer extremely well. At the first dressing the ligatures were found dissolved and never occasioned any inconvenience.

Pursuing the enquiry I performed a number of experiments with various animal substances as cat gut, parchment and various kinds of leather

In many respects however Physick's operation for the cure of artificial anus by a lateral

anastomosis of the gut showed superior knowledge of physiology and of the principles of surgery. Due to gangrene incident to a strangulated hernia an artificial anus was occasionally met with. Physick's famous case was operated upon in 1809. He subsequently described the case in lectures to his classes and Dorsey's description appeared in his *Elements* in 1813. Later a full report prepared by Dr B H Coates appeared in Volume II of the *North American Medical and Surgical Journal*. Dorsey's *Elements* contains the paragraph published here with in facsimile. The report of Dr Coates gives in greater detail a description of the operation.

The two ends of the intestine were found by a careful examination to adhere to each other for some distance and the form thus presented has been compared in this case to that of a double barrelled run.

The next method proposed by Dr. Physick was to cut a lateral opening through the sides of the intestine where they were adherent. But not knowing the extent of the adhesion inwardly, he thought it necessary to adopt some preliminary measure for ensuring its existence to such a depth as might admit of the contemplated lateral opening without penetrating the cavity of the peritoneum. By introducing his finger into the intestine through one orifice and his thumb through the other he was enabled to satisfy himself that nothing intervened between them but the sides of the bowel. He was thus enabled without risk to pass a needle armed with a ligature from one portion of the intestine into the other through the sides which were in contact about an inch within the orifices which ligature was then secured with a slipknot.

This operation was performed on the 18th day of January 1800

After about three weeks had elapsed concluding that the required union between the two folds of peritoneum was sufficiently ensured Dr Physick divided with a bistoury all the parts which now remained included within the noose of the ligature. No unfavourable symptom occurred in consequence.

Two or three weeks subsequent to the completion of the lateral anastomosis fecal matter passed through the new opening and was voided through the natural channel occasionally however through the artificial opening. The patient was discharged from the Pennsylvania Hospital before the external opening had entirely closed which according to Dr Dorsey ultimately occurred.

An earlier procedure seeking a remedy for this distressing condition appeared in a paper by Christianus Ernestus Schmalkalden published in

tPhy ick ll tt iso t thl kh is an b qu t emm ca  
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 J h M rshall 735 535 Chl f J t t th t t d St  
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In a patient with artificial anus at the Pennsylvania Hospital Dr Physick performed an operation which will probably be found to afford complete relief in many similar cases. The sides of the intestine in this instance were consolidated laterally or in Mr Cooper's language like a double-barrelled gun. In order to ensure this union a ligature was passed through the intestine and suffered to remain a week, keeping its sides in close contact, after which Dr Physick cut a hole to the side of the intestine where the two portions had thus united, and by stopping the external orifice, the feces regained their natural route the external aperture was afterwards healed and the patient relieved from his most loathsome complaint he has for several years enjoyed perfect health.

Facsimile of first published report of Physick's anastomosis of the intestine—Dorsey's Elements of Surgery Philadelphia 1813

1798<sup>1</sup> Schmalkalden's pamphlet was probably unknown to Physick. Desault<sup>2</sup> had advocated the removal of the dividing septum between the two loops of gut which he called the spur. In his lectures on clinical surgery Dupuytren<sup>3</sup> cites a case which came under his care in 1809 in which the idea of dividing the septum creating a lateral anastomosis occurred to him. Recognizing however the facility with which serous membranes unite, he advocated passing a ligature through the adherent sides of both ends of the intestine as far as possible from the projection of the spur the opening made by the ligature later to be enlarged so as to admit a piece of braid thus making it possible to enlarge the opening still further by means of a perforating instrument. It does not appear that Dupuytren actually performed the operation until 1813. In his Clinical Lectures<sup>4</sup> describing Case II he said

I resolved therefore on perforating this septum and then pierce it with a needle carried as high as possible into the cavity of the upper end its point being received in the cavity of the lower end and drawn out. A ligature with which the needle was armed was left in the opening thus made.

A few days after a larger ligature was introduced through the aperture. From that time gas began to escape from the natural anus. The size of the ligature was increased at each dressing and in eight days the patient passed his feces by the fundament.

Desirous of removing completely the disease I thought that the portion of the septum above the aperture made by the needle ought also to take on

the adhesive process and that it might be divided with as little danger as the part below and therefore determined to make the attempt. This consisted in an incision every three or four days at the distance of half a line from the upper part of the septum by means of blunt scissors directed on the index finger. These incisions small in extent and not passing beyond the limits of the already established adhesions, increased the aperture of communication so much that the feces were discharged by the natural anus.

Dupuytren reports that yielding to the importunities of his patient he completely divided the septum and a few hours later his patient showed symptoms of peritonitis which resulted in death. Dupuytren however continued to advocate the procedure and his Lectures on Clinical Surgery contains his summary of the experience of himself and others.

From 1813 to 1824 forty one operations of this nature have been performed twenty one by our selves and twenty by other surgeons amongst whom we name with pleasure M Lallemand of Montpellier. Three fourths of them were in consequence of gangrene following strangulated hernia and the remaining fourth of wounds with more or less considerable loss of substance of the alimentary canal. Of these forty one cases three have died one from supposed effusion of fecal matter one from indigestion and a third from acute peritonitis. Of the thirty eight remaining the majority had not an unpleasant symptom some it is true suffered from colic nausea and even vomiting but they were soon relieved by effervescent draughts and the application of leeches to the anus and emollient fomentations to the abdomen.

The cure has not been equally perfect in all these cases. In nine there have remained fistulas of various extent obliging the patient to wear constantly a bandage in order to prevent the escape of flatus mucous bilious or fecal matter. The other twenty nine were radically cured in from two to six months. The fatality has therefore been one in sixteen and taking away the one who perished accidentally from indigestion it is reduced to one twentieth of the cases operated upon a result much more favorable than generally obtained in great surgical operations. Lastly it is to be remarked that the last fourth of patients although less fortunate and obliged to wear a bandage with a pad were in a situation incomparably preferable to that in which they had previously existed.

Philip Syng Physick was born in Philadelphia in 1763. He was prepared for college under Robert Proud and entered the University of Pennsylvania receiving his A B degree in 1785. Shortly thereafter he enrolled as pupil apprentice under Dr Adam Kuhn<sup>5</sup> attending in addition

Ad m K h 57 3 y p f e f m t r m d c a n d b o t a n y  
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Per Jon pb Desa 1 744 1795  
Cuth m D puytr 1777 835  
Per 53 1 11 p 464

lectures in the University. After an apprenticeship of three and a half years he accompanied his father to Europe and enrolled as a student under John Hunter the leading English surgeon and physiologist of the day. In May, 1791, upon the completion of a one year surgical residency in St. George's Hospital he was admitted a licentiate of the Royal College of Surgeons. He then proceeded to Edinburgh where after one year of study he was granted the degree of Doctor of Medicine. He returned to Philadelphia in the fall of that year. In 1794 he became one of the surgeons of the Pennsylvania Hospital and in 1804 was elected Professor of Surgery in the University of Pennsylvania. In 1807 his nephew John Syng Dorsey

was made his adjunct in the Department of Surgery. He was an impressive lecturer usually reading his lectures from manuscripts or using copious notes. In 1819 he resigned the chair of surgery and was transferred to that of anatomy.

For more than a third of a century Physick was the surgical mentor of thousands of students and his surgical teaching widely disseminated through his pupils and through Dorsey's 'Elements' pointed the way to greatly improved surgical practice. Probably no surgical teacher in America exercised so wide an influence as did Physick. He brought to America the surgery of John Hunter and has deservedly received the appellation 'The Father of American Surgery.'

# ABSTRACTS OF CURRENT LITERATURE

## SURGERY OF THE HEAD AND NECK

### EYE

Call W D Ocular Symptomatology in Dengue  
Based on an Analysis of 1241 Cases *Arch Ophth* 1928 Jan 628

In dengue fever the ocular symptoms are a striking feature of the early stages of the disease. During an epidemic in 1923 1241 patients with dengue fever were admitted to the Station Hospital at Fort Sam Houston Texas. In these cases photophobia was an early symptom often preceding all others and was most marked during the first day or two. Quite intense retrobulbar pain and headache were present in every case. These symptoms were as characteristic of the condition as the dermatological signs and adenopathy. Other symptoms included conjunctival congestion, ciliary injection, lachrymation and global tenderness.

No organism was found to account for the conjunctival hyperemia. Engorgement of the retinal blood vessels was a constant finding. It began early and was most marked on the third or fourth day when the headache and retrobulbar pain were also most intense. Concurrently there was some degree of hyperemia of the optic nerve head without swelling or blurring of the disk margins. In some of the cases weakness of accommodation became at times so marked that the author considered it a paralysis of the ciliary muscle. No indoplegia attributable to dengue was found.

IRVING WESCOTT M D

Weymouth F W and Others Visual Acuity with In the Area Centralis and Its Relation to Eye Movements and Fixation *Am J Ophth* 1928 xi 947

This article reports an investigation of the visual acuity of a central retinal region (including the fovea) with a radius of 85 or 0.42 mm from the axis of fixation. The method of observation yielded significant results to three observers. These are summarized as follows:

1. In the light adapted eye a uniform sensory gradient is shown to exist in the central retinal area similar to that found in the entire retina (Wertheim, Aubert, Fick and others). The visual acuity attains a sharp maximum at the axis of fixation. It decreases rapidly but regularly in all directions. It shows no breaks or marked variations in rate of change at the margins of any of the known anatomical areas (fovea, rod free area, pigmented area or macula non vascular area).

2. For two observers a significant difference is shown to exist between direct fixation and 22 and

for one observer for 11, showing that the gradient continues to the very center of the retina. A similar retinal gradient is indicated by Wertheim to 230, and by Aubert to 115.

3. The horizontal and vertical meridians (the only ones tested) are shown to have different rates of decrease of visual acuity from the axis of fixation.

4. The acuity is shown to be higher when the lines of the test object point toward the axis of fixation.

5. These results strongly support the view that the sensory gradient is the basic factor in eye movements and fixation.

Among the factors affecting monocular visual acuity may be included the following:

A Factors related to the eye

1. Sensibility of the retina varying with (a) age and sex, (b) retinal adaptation and (c) topography of the retina.

2. Refractive condition of the eye varying with (a) age and sex, (b) refractive errors.

3. Pupillary diameter.

4. Eye movements.

B Factors related to the stimulus: (1) size of test object, (2) type of test object, (3) brightness of general illumination, (4) contrast between object and background, (5) time of exposure of object, and (6) wave length of light used.

For calculation of the size of retinal images and visual angles the following method was used. Let  $x$  equal the distance of the object from the first focal point,  $y$  the size of the object,  $y'$  the size of the retinal image,  $w$  the angle in radians subtended by the object at the first nodal point and by the image at the second nodal point, and  $F$  the refractive power of the eye (53.64D for Gullstrand's

schematic eye). Then  $y \left( F - \frac{1}{x} \right) = \frac{y'}{x}$  and  $y =$

$$\frac{y'}{\sqrt{(F - \frac{1}{x})}} \text{ approximately } \frac{y'}{x F}$$

LESLIE L. MCCOY M D

Peterson R A Iris Prolapse from Corneal Ulcer Treatment by Conjunctival Flap *Am J Ophth* 1928 xi 979

Prolapse of the iris following corneal ulcer and perforation is common in China. Peterson reports thirty-eight cases. Twenty-nine of the patients were males. The ages ranged from eight to fifty-two years. In thirteen cases both eyes were involved. In four of these there was gonorrheal conjunctivitis.

lectures in the University. After an apprenticeship of three and a half years he accompanied his father to Europe and enrolled as a student under John Hunter the leading English surgeon and physiologist of the day. In May, 1791 upon the completion of a one year surgical residency in St. George's Hospital he was admitted a licentiate of the Royal College of Surgeons. He then proceeded to Edinburgh where after one year of study he was granted the degree of Doctor of Medicine. He returned to Philadelphia in the fall of that year. In 1794 he became one of the surgeons of the Pennsylvania Hospital and in 1805 was elected Professor of Surgery in the University of Pennsylvania. In 1807 his nephew John Syme Dorsey,

was made his adjunct in the Department of Surgery. He was an impressive lecturer usually reading his lectures from manuscripts or using copious notes. In 1810 he resigned the chair of surgery and was transferred to that of anatomy.

For more than a third of a century Physick was the surgical mentor of thousands of students and his surgical teaching widely disseminated through his pupils and through Dorsey's *Elements* pointed the way to greatly improved surgical practice. Probably no surgical teacher in America exercised so wide an influence as did Physick. He brought to America the surgery of John Hunter and has deservedly received the appellation "The Father of American Surgery."

The treatment is simple enucleation unless the tumor has extended beyond the globe when extirpation of the orbit followed by radium and X ray therapy is necessary.

The author reports six cases and draws the following conclusions:

1 Blind painful disfiguring eyes should be enucleated as malignancy is occasionally present in such eyes though not demonstrable.

2 Routine examination of the fundus is very necessary as sarcomata are sometimes found in apparently normal eyes.

3 Careful notes of repeated observations of suspicious pigmented deposits in the choroid are of importance.

4 Early choroid sarcomata simulate exudative choroiditis.

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LESLIE L. MCCOY M.D.

Lamb F W. The Diagnostic and Prognostic Significance of Retinal Hemorrhage. *Ohio State M J* 1928 xiv 949.

Retinal hemorrhages may occur in any of the layers of the retina. Their anatomical location is an important factor in the prognosis as to vision.

Except in cases of obstruction or injury the primary cause of retinal hemorrhage is disease of the blood vessel walls. Retinal hemorrhages occur most commonly in nephritis associated with neuroretinitis. When there is a well developed retinitis the prognosis as to life is poor.

In arteriosclerosis retinal hemorrhage is common and indicates that the blood vessel walls are considerably weakened and that apoplexy is impending.

In diabetes retinal hemorrhages are usually round and punctate and occur near the macula. The prognosis for life is better than in albuminuric retinitis.

In leukemia the hemorrhages usually occur in the fiber layer and near the periphery and have a white spot in the center. The prognosis is poor for vision and life.

Hemorrhages seen in the retina in a case of anemia point to the diagnosis of pernicious anemia.

In thrombosis of the central retinal vein hemorrhages are exceedingly numerous.

When the diagnosis of choked disk is uncertain a hemorrhage at the margin of the disk eliminates the doubt.

Retinal hemorrhages occur in from 30 to 40 per cent of newborn infants. In such cases they usually become absorbed without loss of vision.

An aid in the diagnosis and study of retinal hemorrhages is the use of the red free light in the ophthalmoscopic examination.

LYMAN A. CORPS M.D.

Mengel W G. Retinal Disease with Massive Exudation. Report of a Case. *J Med Soc N Jersey* 1928 xiv 788.

The case reported was that of a boy six and a half years old who was first seen by the author after

vision in the right eye had been failing for a year. There was no history of trauma or previous inflammation. The findings of a general physical examination suggested the presence of pulmonary tuberculosis and infection of the right maxillary sinus. On ophthalmoscopic examination the vitreous was found filled with dust like opacities. The nerve head was indistinct and an immense opaque dense yellowish white mass encircling the macula and crossed by retinal vessels was seen. The surface of the mass was elevated and had a mottled cumulus cloud appearance. Its margins merged into the surrounding retina and areas of patches were seen in different parts of the fundus chiefly along large vessels. No hemorrhages were visible.

Eight months later the opaque mass was larger and extended along the larger retinal vessels. In the nasal quadrant the retina was detached. The blood vessels were enlarged and tortuous.

Nine months later the vessel changes were still more marked. Coils of small vessels were more distinct. The dilations of the terminal branches of the superior temporal vein were larger and more numerous and the white mass was larger.

A month later enucleation was performed because of secondary glaucoma.

Microscopical examination showed marked disorganization of the retina and areas of newly formed fibrous tissue masses located chiefly in the nuclear layers. The neuroglial tissue was proliferated. Some of the larger vessels especially the veins were enormously dilated and the walls of the vessels particularly those of the smaller arteries showed marked disease changes. Some of them presenting aneurismal dilations.

The vascular changes resembled those described by Coats and the military aneurisms described by Leher.

LYMAN A. CORPS M.D.

## EAR

Mayer O. The Pathology of Otosclerosis. *J Laryngol & Otol* 1928 xliii 843.

The author states that areas of otosclerosis are to be regarded as hyperplasias. This view is based not only on the histological appearance of the foci but also on their multiplicity and typical and symmetrical localization. The presence of minute islands of atypical tissue (constituting the points of origin in these areas) the simultaneous presence of maldevelopments in the inner ear and other parts of the auditory organ the general hyperplasia of the temporal bone the association of the condition with blue sclerotics and osteopathy Paget's disease and neurofibroma of the eighth nerve and the hereditary character of the otosclerosis.

JAMES C. BRASWELL, M.D.

Portmann G. Vasomotor Affections of the Internal Ear. *J Laryngol & Otol* 1928 xliii 860.

The author states that the angiospasmic syndrome of the labyrinth includes (1) tinnitus (2)



Three patients were syphilitic and nineteen showed poor general nutrition. In thirty six cases the lesion was located in the upper half of the cornea.

The prolapse varied from 2 to 10 mm in diameter. The pre-operative treatment consisted in measures to clear up the conjunctival inflammation. Trachoma was not regarded as a contra indication to operation unless it was active. Lachrymal drainage was investigated. For several days preceding the operation silver nitrate and atropin in 1 per cent solutions were used routinely. In all except the cases of the younger patients the operation was done under local anesthesia. A large conjunctival flap was made and two mattress sutures were introduced into it. The prolapsed iris was then excised and the sutures were tied. On completion of the operation atropine sulphate and one of the solutions of silver proteid were instilled a firm dressing was applied over both eyes and the patient was kept in bed for a day.

Kuhnt's pedunculated flaps were found unsatisfactory as were also single sutures.

The minimal time it was necessary to keep the flap in position to secure good results was six days. The sutures were removed on the seventh day and the patient was allowed to open the eyes on the eighth day. Optical iridectomy was done after the second week. The false pterygium remaining after retraction of the excess of conjunctival tissue was not disturbed for at least two months. Visual iridectomy was done in twenty eight cases.

In twenty eight cases in which a good operative result was obtained there was definite improvement of vision ranging from 20/200 to 20/20.

LESLIE L. MCCOY M.D.

Mills L. Modern Cataract Surgery *J Am M Ass* 1928 xci 199

Mills discusses postoperative iritis and prolapse of the iris.

Postoperative iritis is of four types (1) traumatic iritis (2) endophthalmitis phaco-anaphylactica (3) endogenous iritis and (4) exogenous iritis.

Traumatic iritis is caused by rough or excessive manipulation of the tissues irritation from hard fragments of lens remaining in the eye tissue inclinations in the wound due to poor operative technique pressure and drag on the incarcerated iris tissue and a drag on the intact iris by herniation of the vitreous into the anterior chamber.

Endophthalmitis phaco-anaphylactica may be prevented by careful expression and irrigation of loose lens cortex and in some cases by irrigation of the anterior chamber with warm half normal saline solution (Fetce) which gives definition to the lens substance that otherwise is not visible. Mills states that in his experience irrigation has never been followed by iritis.

Endogenous iritis develops from one to several weeks after any form of cataract operation as the result of unrecognized focal or systemic disease such as dental abscesses and intestinal infections.

Exogenous iritis is due to infection of the tear sac and bacterial invasion by way of tissue incarcerated in the wound.

Prolapse of the iris may be primary or secondary. Primary prolapse is due to prolonged fixation of the globe and iris following the knife blade through the incision. Secondary prolapse is caused by trauma due to awkward operative manipulations excessive pressure too small an incision the pressure of defective dressings meddlesome and too early inspection of the wound strains and assaults during coarseness defective incisions delay of healing and the omission of iridectomy.

Until recently the treatment of the incision in cataract surgery has been out of line with the treatment of other presumably clean operative wounds, i.e. full suture of the wound to prevent infection and restore the normal relations. Failure to suture the operative wounds of the eyes has been the chief single cause of infection from without and the extrusion of the intra-ocular contents. These complications may be avoided by covering the wound with a narrow but complete flap of conjunctiva formed during the incision or before closing the flap over the sclerocorneal wound and fixing it with about five interrupted sutures placed with regard to the peculiarities of the wound. LESLIE L. MCCOY M.D.

Greear J N Jr. Sarcoma of the Choroid *Surg Gynecol* 1928 li 633

The most common malignant intra-ocular tumor is sarcoma of the choroid. The development of this neoplasm shows the following four stages:

1. An early stage which may or may not be accompanied by detachment of the retina or disturbance of vision.

A glaucomatous stage in which the eye usually assumes the appearance of acute congestive or absolute glaucoma.

3. A stage at which the tumor has extended beyond the confines of the globe.

4. A stage at which metastatic nodules are formed in the internal organs, most frequently the liver. Years usually pass before the sarcoma has run its course although its growth becomes more rapid in the later stages.

In the diagnosis the intra-ocular tension is of significance because it is normal or increased whereas in simple detachment of the retina it is usually subnormal. Transillumination is of great aid. Carefully taken history regarding the vision in the eye prior to the attack and regarding the tension and refraction of the other eye is of importance. Localized varicosities of the anterior ciliary vessels and unusual pigmentation are of significance.

Sarcoma of the choroid appears between the fifteenth and eighty-fifth years of age but is most common between the fortieth and sixtieth years. Its prognosis is always grave. Metastases are usually formed within a few months after enucleation but may not cause death until after from five to ten years.

The treatment is simple enucleation unless the tumor has extended beyond the globe when extirpation of the orbit followed by radium and X-ray therapy is necessary.

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JAMES C. BRASWELL, M.D.

Portmann G. Vasomotor Affections of the Internal Ear. *J Laryngol & Otol* 1923 xliii 860.

The author states that the angospasmodic syndrome of the labyrinth includes (1) tinnitus (2)

deafness (3) vestibular hyperexcitability, and (4) sympathetic hypertonia

In addition to this syndrome of arterial resistance or hypertonicity of the labyrinth there is the syndrome of hypotonia or laxity with the classical signs of the sensorial suffering but with vestibular hypoexcitability and sympathetic hypotonia

These two syndromes may alternate with each other. Different reactions of the vegetative system under the influence of various causes may be noted but as a rule there is a hypertonic or parasympathetic syndrome which makes it possible to classify the subject as a vagotonic or sympathicotonic. In clinics there are seen fairly often persons in whom the disequilibrium seems to be caused by a global hyperexcitability of the vegetative nervous system. This state has been described as "neurotonia (Guillaume) total disequilibrium of the whole system (Laignel Lavastine) vegetative dystonia" (Si card) and amphotonia (Danielopolu)

However this vegetative dystonia may occur in persons who are predominantly vagotonic in others who are predominantly sympathicotonic and in still others in whom hypertonia predominates over the sympathetic at the level of one organ of the body and the parasympathetic predominates at the level of another organ

Vagospasmodic disturbances and labyrinthine vascular spasms are due to most diverse causes. The causes may be mechanical endocranial toxic or psychic. The most important factors affecting this regulating apparatus are undoubtedly the action of the nervous system and the action of the endocrine glands

JAMES C BRASWELL M D

Poe D L. A Study of the Fossa Subarcuata as a Passageway for Infection from the Labyrinth to the Cerebellum. *Ann Otol Rhinol & Laryngol* 1925 xxxvii 1767

In the temporal bone of the adult the fossa subarcuata is usually obliterated but in some cases it may exist as a small depression lodging a process of the dura mater and in others it may persist in its embryonic state. In the latter instance it is a portal by which infectious organisms from the ear can enter the brain

The author reports a case of diffuse labyrinthitis in which the infection entered the brain through several openings in the petrous part of the temporal bone but first and chiefly through the fossa subarcuata

JAMES C BRASWELL M D

## NOSE AND SINUSES

Catter W W. The Prevention of Nasal Deformities Following the Submucous Operation. *Arch Otolaryngol* 1928 viii 555

Submucous resection is the best method yet devised to correct a deflected septum with obstruction. Certain precautions are necessary to guard against deformities. The operation should not be performed before the eighteenth year of age unless

the indications are urgent. As the upper edge of the septum is an important part of the nasal arch it must not be dislodged. The free edge of the nasal alar cartilage is an important vertical support. The septum should be removed by means of punch forceps without traction on the dorsal segment. Deformities resulting from this operation are best corrected by a conjoined bone and cartilage graft taken from the patient's ribs. Correction may be made also with bone or cartilage alone.

The article contains several photographs of corrected external deformities. W M PATON M D

Lederer F L and Livingston G S. Tuberculosis of the Nasal Accessory Sinuses. *Ann Otol Rhinol & Laryngol* 1915 xxxvii 1176

The authors report a case of tuberculosis of the nasal accessory sinuses arising primarily as a tuberculous osteitis of the cranial bones. The patient had complained for a number of years of frontal headaches accompanied by vertigo and nausea. Eventually the condition caused epistaxis and swelling of the eyelids followed by blindness. The ocular fundi showed moderate optic neuritis.

Rhinoscopic examination revealed enlarged inferior and middle turbinates and a small amount of granulation tissue in the middle meatus. In the roentgenogram a diffuse increase in the density of the sinuses was noted.

At operation the ethmoid and sphenoid were extirpated and tuberculous granulation tissue with typical tubercles and giant cells was removed.

Vision did not return. About three weeks after the operation a swelling appeared over the glabella and the left supra-orbital ridge. When this was incised pus was found exuding from the frontal sinuses. The frontal sinuses were curetted. Recovery was good and vision began to return in one eye but the patient left the hospital against orders and returned about five months later with a fatal tuberculous meningitis.

GEORGE R. McLEURY M D

Lille H I and Lillie W I. The Effect on Certain Syndromes of Chiasmal Tumor. *Laryngol* 1928 xxxviii 751

Disease of the paranasal sinuses may be associated with chiasmal tumor and cause disturbances of vision not typically characteristic of either condition. Surgical treatment of disease of these sinuses should be instituted before the intracranial operation for chiasmal tumor.

The ophthalmological syndrome of chiasmal tumor is characteristic and constant whereas that of disease of the paranasal sinuses is not.

The rhinological manifestations of disease of the paranasal sinuses are not always characteristic and the relative importance of such disease so far as visual disturbances are concerned is difficult to evaluate. The incidence of visual disturbance in frank disease of the paranasal sinuses is extremely low.

The patient should be observed for a sufficient length of time for a satisfactory diagnosis to be made.

and in the study of the condition the ophthalmologist neurologist and rhinologist should cooperate

**Fahler G E** Roentgenological Signs Which Indicate Extension of Infection from the Ethmoid and Sphenoid Sinuses to the Base of the Skull *Arch Otolaryngol* 1928 viii 638

The study of infections of the ethmoid and sphenoid sinuses requires a roentgenogram of the base of the skull. The roentgenological signs of deep perisinusitis or changes incident to chronic ethmoid sphenoid sinusitis consist in a cloudiness with a vague shading off of the anatomical details thickening of the posterior and lateral wall of the sphenoid and ethmoid sinuses and an area of increased density which indicates osteitis of the surrounding bone.

This perisinusitis commonly extends into the middle fossa of the skull but may involve also the petrous and mastoid portions of the temporal bones and even the posterior fossa. In some cases it is general and involves the base of the skull but in others is confined to the side in which there is a deep sinusitis. Therefore the conclusion may be drawn that it is an extension of the inflammation directly from the affected sinus. The author suggests that an effect on the sella turcica resulting from an extension of the inflammatory process may account for unexplained anomalies which have been observed by roentgenologists for many years.

ADOLPH HARTLAGE M D

**Watson Williams P** Optic Neuritis Following Sphenoidal Sinusitis Located by the Differential Exploratory Test *Brit M J* 1928 ii 1030

Definite optic neuritis with contraction of the visual fields has been known to result from chronic sphenoidal sinusitis. The saving of sight depends upon drainage and disinfection of the infected sinus. When the sinus is normal anatomically its drainage is not difficult but when it is irregularly formed as when one sphenoidal sinus is relatively large and the other is relatively small the infected sinus may be entirely missed.

The author reports a case in which the ocular disturbance began with iritis in the right eye. Later the left eye became involved and a diagnosis of optic neuritis was made. At this time there was no nasal discharge and the nasal passages were negative. On endoscopy the minute vessels at the arch of the choana were found to be injected. Exploration of the sinuses revealed pus in the left antrum. The right antrum was sterile. The sphenoidal sinus which was entered through the right nasal passage contained blood but no organisms. The differential test demonstrated that the cannula in the right side of the nose and the cannula in the left side were both in the right sphenoidal sinus. The small left sphenoidal sinus was opened and mucopus was evacuated. Drainage was established through the nose.

Three weeks after the sinus operation the vision had improved and the optic neuritis was less marked.

Three months later all evidence of infection of the retinal vessels had disappeared.

WILLIAM J PICKETT M D

## PHARYNX

**Rigby O C** Intramuscular Injections of Bismuth a Specific Treatment for Vincent's Angina *Tri State Med J* 1928 i 47

As infection with the spirochete of syphilis responds to treatment with arsenicals and also to injections of bismuth it occurred to the author that bismuth might be equally effective against the spirochete of Vincent's angina.

He first made a local application of 10 per cent acid tartarobismuthate of potassium. The result was good. In December 1916 he first injected 0.02 gm of potassium bismuth tartrate with butyr. The injection was followed by permanent relief of the symptoms. The membrane disappeared and the smears became negative after twenty-four hours.

Rigby reports sixteen other cases with good results. In all the smears were positive before the treatment and the symptoms ceased and the smears became negative within from twenty-four to forty-eight hours after the injection. The injection was made into the gluteal muscle. No local treatment was given.

The author states that a number of other physicians have had equally good results from this treatment no failures being reported. The throat lesions apparently respond more satisfactorily than the infection of the gums. CHARLES W FALEMAN M D

## NECK

**Chesney A M** Clawson T A and Webster B. Endemic Goiter in Rabbits. I. Incidence and Characteristics. *Bull Johns Hopkins Hosp* Balt 1925 xliii 261

**Webster B** Clawson T A and Chesney A M. Endemic Goiter in Rabbits. II. Heat Production in Goitrous and Non Goitrous Animals. *Bull Johns Hopkins Hosp* Balt 1928 xliii 278

**Webster B** and Chesney A M. Endemic Goiter in Rabbits. III. The Effect of the Administration of Iodine. *Bull Johns Hopkins Hosp* Balt 1925 xliii 291

**CHESNEY CLAWSON and WEBSTER** In the course of experimental work on syphilis which was carried out on rabbits the development of goiter was noted in 486 of the animals.

Brown Pearce and Van Allen in studying a series of 645 apparently normal rabbits found the maximum weight of the thyroid gland to be 1.73 gm. Mearns has never observed a rabbit thyroid weighing more than 2 gm even in animals obtained from goitrous regions. In the authors' animals the gland often weighed considerably more than the maximum reported by other investigators. The maximum weight was 43 gm. Necropsy was performed on most of the rabbits within two hundred days after they were acquired.

There was nothing in the breed of the animals their housing or their diet which could have influenced the production of goiter. The goiters were easily recognized by palpation and the progressive enlargement could be followed clinically. The microscopic appearance of the enlarged glands was on the whole uniform presenting hyperplasia with little or no tendency toward colloid formation. It was evident that the increase in the size of the gland had been brought about by the formation of many new follicles or an extension of those already in existence. The epithelium was columnar in type and in many of the sections the follicles were ill defined or absent being filled by the proliferation of epithelial cells. However there were no in foldings such as have been seen in exophthalmic goiter in man.

In many of the animals with enlargement of the thyroid the suprarenal glands were also enlarged.

The authors state that the essential cause of the development of the goiter has not yet been discovered. Although most of the animals had been used for the study of experimental syphilis it was possible to demonstrate that syphilitic infection was not essential to the development of the condition. In many instances the enlargement of the thyroid was progressive and the animal subsequently died without any demonstrable cause for its death but the extreme loss of weight was striking. Neither the behavior of the animals nor the microscopic appearance of the glands warranted the conclusion that the condition was similar to Graves' disease in man.

WEBSTER CLAWSON and CHESNEY. The production of heat was studied in 66 normal and 45 goitrous rabbits.

In the normal rabbits the average metabolic rate was found to be 64 calories per kilogram per hour. Variations in body weight occurred without appreciably altering the basal rate.

In the goitrous rabbits the average heat production was 16.6 per cent lower than in the normal rabbits. The rabbits with the largest goiters showed the greatest depression in the metabolic rate.

The heat production in the individual goitrous rabbits was practically constant over a period of one year provided there was no great change in the size of the gland.

Certain animals which died and for whose death no cause could be found showed an average increase of approximately 20 per cent in their metabolic rate during a period within two weeks of death.

WEBSTER and CHESNEY. When iodine was administered to rabbits with goiter the animals immediately became more alert and active the metabolic rate rose rapidly the body weight decreased and the heat production increased. The behavior of the animals suggested strongly that an excess of thyroid secretion had suddenly been elaborated and poured into the system. In normal rabbits the administration of an excess of iodine caused a temporary lowering of the metabolic rate and in the thyroid gland a diffuse outpouring of colloid with flattening of the alveolar epithelium.

The severity of the reaction in the goitrous rabbits bore a direct relationship to the extent of the hyperplasia. The iodine tended to bring about involution of the hyperplastic tissues. Areas of hyperinvolution of colloid adenomata were observed but both diffuse and localized areas of persistent hyperplasia were noted these resembling respectively the so-called military and small encapsulated adenomata.

R. V. B. SMITH, M.D.

ELSE, J. E. The Prevention of Recurrent Goiter. *Surg. Clin. N. Am.*, 1913, vol. 13, 75.

Else states that he has recently been seeing more recurrences following operation for goiter than formerly. The reason he believes is that most goiter operations are not being done by surgeons especially trained in goiter surgery. He states that recurrence can usually be prevented by (1) careful pre-operative examination (2) early operation before permanent lesions have been produced (3) complete operation and (4) saturation of the thyroid with iodine before and after operation.

JACOB M. MORRIS, M.D.

FINKE, N. S. and HARTNER, D. Radium Treatment of Intrinsic Carcinoma of the Larynx. *Bull. N. Y. Acad. Med.*, 1913, 11, 886.

After fifteen years' experience the authors have come to the conclusion that radium should be buried in the tissues whenever possible. They review fifteen cases of carcinoma of the larynx in thirteen of which the diagnosis was confirmed by microscopic examination.

The operation advocated closely resembles that of Bayet in which a large window is made in the thyroid cartilage the framework left consists of the four margins. The outer surface of the growth covered by the perichondrium is exposed and from five to ten platinum-iridium needles are inserted parallel with one another and vertical. These needles do not penetrate into the growth or into the larynx. When the growth is subglottic the needles may occasionally perforate the air passage. Great care is taken to prevent sepsis. Lumen threads soaked in a 1:1000 solution of flavine are attached to the needles tied together and buried beneath the muscles. The wound is closed with double sutures every other one of which is tied and the remainder of which are left untied until after removal of the radium. The incision is completely sealed with collodion. The other side is treated in the same way if it is involved by the growth. A low tracheotomy is performed last to prevent infection of the laryngeal wound.

The needles are left in place for from four and a half to eight days. Following the removal of the needles the wound is thoroughly irrigated with peroxide or flavine and then completely closed unless pus is present.

The reaction is rather severe and is associated with oedematous swelling and inflammation. Frequently all signs of the growth have disappeared at the end

of six weeks the cords remaining symmetrically and equally movable. At this time the tracheotomy tube may usually be removed. The applicators used are platinum needles 1 or 2 cm long with a wall thickness of 0.5 mm containing 0.5 or 1.0 mgm of radium. Ordinarily eight needles containing 7 mgm have been used for six or seven days. One third of the cases reviewed received heavily filtered X ray or irradiation two or three days before operation. If it is true that lethal doses delivered to parts of a tumor *in vivo* render the remainder of the growth more susceptible to moderate doses of irradiation radium needles or seeds may produce better effects than homogeneous irradiation of the tumor. Lighter dosage with less danger of sepsis is superior to heavier dosage.

Of the fifteen cases reviewed eight were in the early stages five were in the advanced stages and two were inoperable. In six of the eight early cases the growths entirely disappeared and the patients remained well for periods of from one to three years. Of the five patients with advanced cancer one remained cured for four years one developed a recurrence in the tracheotomy wound a year later and died eight months later one developed stenosis and died of recurrence twenty one months later and one died of chloroform poisoning before the operation was completed. Of the two patients whose condition was inoperable having extended into the pharynx or the neck one remained well for two and one half years and then developed a recurrence and the other died after fifteen months probably of metastases.

The authors state that the results are encouraging and that it is quite possible that radium irradiation may prove to be the best method of treating intrinsic carcinoma of the larynx. A high incidence of cure can be expected in early cases in which the disease is found to be strictly localized to the vocal cords.

The results are far superior to those obtained by operation since the voice was completely restored in six of eight cases and the larynx did not seem to be weakened in any way. There is no doubt that in advanced cases radium should always be tried before laryngectomy. If the disease is not completely eradicated within three months the radium treatment should be repeated or an operation performed. In inoperable cases prolongation of life may be obtained by the methods described.

A JAMES LARKIN, M.D.

# **New G B A Two Stage Laryngectomy Surg Gynec & Obst 1928 17:11 826**

If it becomes necessary to remove the larynx because of a malignant growth it is of first importance to remove the growth completely and to guard the patient against reaction. The result should be a tracheal opening which does not require the use of a tube. After the old two stage operation of Crile the patient was usually obliged to wear a tracheotomy tube. The one stage operation of MacKenzie, while overcoming this disadvantage and being technically more simple requires a great deal of post operative care from the surgeon and nurse. The two stage operation now used by New seems to combine the advantages of both of these operations without the disadvantages of constant close post operative care drainage tubes and many irrigations required by the one stage operation and the tracheal structure following the old two stage operation.

During the three year period from 1925 to 1927 inclusive 171 patients suffering from carcinoma of the larynx were examined in the Mayo Clinic and 64 of them were operated upon. In 17 instances thyrotomy and excision were done and in 43 laryngectomy was performed. This group included certain cases of extrinsic lesions but not the epiglottic or postcricoid lesions in which lateral pharyngotomy according to the method of Trotter might be performed. There were 5 explorations. Biopsy was done the day previous to the operation in all cases in which laryngectomy was to be performed.

The points of interest in this method of laryngectomy are (1) the use of local infiltration anaesthesia for the first stage (2) the median line incision and splitting of the hyoid bone (3) the formation of a barrier to infection by means of a clean wound (4) the opening of the trachea later to infect the wound and allow the patient to immunize himself and become accustomed to the opening (5) the performance of the second stage of the operation under paravertebral anaesthesia and infiltration of the pharynx about eight days after the first stage (6) the complete primary closure of the wound of the neck without the usual drains or tubes the split tube being inserted below the tracheal opening (7) the application of gauze rolls laterally on the neck with pressure to eliminate the space previously occupied by the larynx and to support the pharynx and (8) the primary healing of the greater part of the wound of the neck and a tracheal opening without the use of a cannula in practically all cases.

# SURGERY OF THE NERVOUS SYSTEM

## BRAIN AND ITS COVERINGS CRANIAL NERVES

Ingrav S Studies in Neurology II On Cerebellar Function *Bull Johns Hopkins Hosp Balt* 1913 xliii 338

In the author's opinion the cerebellum regulates muscular tension in the body masses in all motor activities and neutralizes the forces of gravity and inertia acting on the different parts of the body masses in a physical sense. It is an organ of regulation for static and postural tone or in a broader sense, of equilibrium. This theory is strongly supported by its vestibular connections and its known vestibular functions. In cerebellar ataxia the impaired limbs behave more or less like dead attachments to the body, showing that in cerebellar disease the faculty of neutralizing the forces of gravity and inertia is lost. Accordingly the different aspects of cerebellar ataxia may be expressions of a disturbance of a fundamental function.

Spinocerebellar fibers end in the anterior and posterior lobes in limited areas. By stimulation of these areas inhibition of the extensors of the extremities can be elicited. Physiological and anatomical facts constitute the most important evidence of localization of cerebellar function. The author cites cases which indicate that the leg center is in the posterior portion and the arm center in the anterior portion of the hemispherical lobe.

(ALBERT C ANDERSON MD)

Naffziger H C and Jones O W Late Traumatic Apoplexy *California & West Med* 1913 xliii 361

Late traumatic apoplexy was first described by Bollinger in 1891. According to Bollinger's hypothesis regarding the condition an injury of the head is followed by degenerative changes softening and necrosis in the brain stem and to a lesser extent in the cerebrum which in turn are followed by alterations in the walls of the blood vessels leading to secondary hemorrhages from decreased resistance around the vessels and increased arterial pressure and death from one to eight weeks after the injury.

The possibility of the occurrence of late hemorrhage is now generally recognized but the relationship of trauma to vascular changes and of late hemorrhages to trauma is as yet undetermined. It is generally believed however that there is a definite relationship between trauma and late central brain bleeding.

The term late traumatic apoplexy has been applied to a variety of conditions such as middle meningeal hemorrhage and subdural hemorrhage fol-

lowing a latent period thrombosis of a vessel and hemorrhage occurring years after injury. These types of conditions do not belong to the clinical group described by Bollinger which included only central brain bleeding especially taking place in the brain stem. More recently delayed central brain bleeding whether in the brain stem or cerebrum has been classified as late traumatic apoplexy.

The length of the latent period generally ran from one day to eight weeks. When hemorrhage occurs after eight weeks it is more apt to be of other causes. The limitation is of importance for medicolegal purposes.

The authors report three cases with marked similarity of symptoms. The pathological changes of the same type and located in the same area in approximately the same area. They differed in extent and degree.

Late central brain bleeding of this type is a rare complication of head injury in accidents. In the cases of elderly working people late intracerebral hemorrhage has usually been considered spontaneous with resulting injustice to injured person. The authors believe that following a head injury an intracerebral hemorrhage occurs in an elderly person with possible changes after a short latent period with or without head symptoms the trauma and the must be considered as directly related.

E. S. PLATT MD

McLean A J The Transbuccal Approach to the Encephalon *Ann Surg*, 1928 lxxxiii 983

An improved experimental technique for the transbuccal approach to the entire ventral surface of the diencephalon mesencephalon and metencephalon and myelencephalon. Despite vascularity of the basilar fossa the operation is practically bloodless. By the procedure described the second fifth sixth and twelfth cranial nerves have been cut at their source under direct vision without damage to closely contiguous structures and many hypophysectomies have been done. Lateral column nerves of the medulla are readily exposed by a posterior fossa or cerebellar exploration. The third and fourth nerve and pituitary hypothalamus are more readily approached by a modified temporal route.

Among the chief main advantages of the technique described are (1) an anatomically correct approach to the base of the brain through an extreme vascularity (2) conservation and approximation of the nasopharyngeal isthmus which interposes an intact physiological barrier as a bar to infection of the meninges (3)

avoidance by light tamponade of the choanae of postoperative nasal discharge which favors infection and (4) anatomical closure of the soft palate in layers which favors healing and prevents improper swallowing due to dehiscence of the palatal wound and associated with danger of postoperative aspiration pneumonia.

The mortality of the operation is lower than that of any previously described procedure. According to Aschmer the mortality of operative approach to the base of the brain is 29 per cent whereas according to Dandy and Reichert it is 16 per cent. The mortality of the author's operation is 11 per cent. In McLean's last twelve operations the morbidity was negligible and there were no fatalities.

E B PLATT M D

Dandy W E. Venous Abnormalities and Angiomata of the Brain. *Arch Surg* 1928 xvi 715

Dandy reports seven cases of venous anomalies of the brain: one case of plexiform angioma, seven cases of cysts with angioma in the walls, and five cases of cavernous angioma. From these and similar cases reported by others he draws the following conclusions:

1. The venous anomalies are of congenital origin. They are manifested clinically by epilepsy and disturbances of mentality. They are frequently associated with other deformities of the brain.

2. Plexiform angioma of the brain resemble similar well known lesions in the spinal cord.

3. The existence of a network of venous spaces in the dura communicating freely with the longitudinal sinus may be a cause of focal epilepsy beginning in the arm or leg. The constant location of this network suggests that it is probably the congenital remains of an embryonic dural circulation.

4. Angiomatous cysts occur throughout the brain but are most common in the cerebellum. The size of the tumor embedded in the wall of the cyst is relatively insignificant. Intracranial pressure develops rapidly because of the cyst formation and the resultant hydrocephalus. Localizing symptoms are usually but not always present. These tumors cannot be differentiated clinically from other types of cysts of the brain.

5. Cavernous angioma vary in their gross appearance. They are scattered throughout the brain but seem to occur with greatest frequency in the frontoparietal region. The predominating sign of this type of tumor is jacksonian epilepsy with or without transient or permanent motor weakness. Pressure symptoms develop if the tumor is situated near the ventricular channels or outlets. The typical tumors begin early in life and grow slowly. The symptoms persist for many years. At times a clinical diagnosis can be made.

6. Hemorrhage from the tumor is a potential operative danger in all types of angioma.

Both cavernous angioma and angiomatous cysts should be treated surgically by complete removal of the solid tumor together with a margin

of contiguous brain tissue. In both types there is a good prospect of complete cure with relatively little operative risk.

ERIC OLDENBERG M D

Cushing H and Bovie W R. Electrosurgery as an Aid to the Removal of Intracranial Tumors. *Surg Gynec & Obst* 1928 xlvii 751

In the removal of intracranial tumors Cushing uses a perfected apparatus developed by Bovie who employs currents with a shift of direction of from 1 to 3 000 000 times a second. The apparatus is so arranged that this almost inconceivably rapidly alternating current can be modified to deliver dehydrating cutting or heating effects through a single lead.

The many details cited in the article to explain the difficulties which arose and were finally conquered in the practical application of this method to neurosurgery cannot be included in an abstract. Suffice it to say that the principle found most generally useful was the removal of scoops of tissue from the center of the tumor by means of a loop of wire electrode until only a shell remained and then removal of the collapsed shell. However the removal of tissue alone is not the only useful function of the apparatus. By means of the coagulating current annoying bleeding surfaces may be dried up. A torn vessel held between the blades of forceps may be effectively sealed by shooting a dehydrating current along the forceps.

The article contains a report of eleven cases including vascular tumors of the skull, meningioma, glioma and acoustic neuroma which were treated by electrosurgery. Two of the patients succumbed to the effects of their disease and one was undoubtedly the victim of inexperience with the method but the remaining eight were cured more effectively and more certainly than experience indicates would have been the case if any other treatment had been used. LEO M DAVIDOFF M D

Cordes E. Osteoplastic Endothelioma of the Dura. (*Das osteoplastische Endotheliom der Dura*). *Mitt a d Grenz g b d Med u Chir* 1923 xli 32

A woman forty two years old became ill with migraine on the left side, vomiting and vertigo. After this attack she was free from symptoms for a considerable time but later a tumor appeared in the left temporal region and caused protrusion of the left eye and headache. A biopsy specimen showed the neoplasm to be an osteoplastic endothelioma. At operation the bleeding was so severe that only pieces of the tumor could be removed. Because of the patient's weakened condition the dura was not opened. After the operation roentgen therapy was given. Examination one year later showed complete recovery.

A woman thirty three years old was injured by an iron pole. At first there were no ill effects from the blow but four weeks later a swelling developed over the right ear. The neoplasm grew slowly and three years later caused severe headache. At examination



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In the author's opinion the cerebellum regulates muscular tension in the body masses in all motor activities and neutralizes the forces of gravity and inertia acting on the different parts of the body masses in a physical sense. It is an organ of regulation for static and postural tone or in a broader sense of equilibrium. This theory is strongly supported by its vestibular connections and its known vestibular functions. In cerebellar ataxia the impaired limbs behave more or less like dead attachments to the body showing that in cerebellar disease the faculty of neutralizing the forces of gravity and inertia is lost. Accordingly the different aspects of cerebellar ataxia may be expressions of a disturbance of a fundamental function.

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GILBERT C. ANDERSON M.D.

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lowing a latent period thrombosis of a cerebral vessel and hemorrhage occurring years after an injury. These types of conditions do not belong to the clinical group described by Bollinger which included only central brain bleeding especially bleeding in the brain stem. More recently delayed central brain bleeding whether in the brain stem or the cerebrum has been classified as late traumatic apoplexy.

The length of the latent period generally ranges from one day to eight weeks. When hemorrhage occurs after eight weeks it is more apt to be due to other causes. The limitation is of importance mainly for medicolegal purposes.

The authors report three cases with marked similarity of symptoms. The pathological changes were of the same type and located in the right hemisphere in approximately the same area. They differed only in extent and degree.

Late central brain bleeding of this type is not a rare complication of head injury in compensable accidents. In the cases of elderly working persons late intracerebral hemorrhage has usually been considered spontaneous with resulting injustice to the injured person. The authors believe that when following a head injury an intracerebral hemorrhage occurs in an elderly person with possible vascular changes after a short latent period with or without head symptoms the trauma and the hemorrhage must be considered as directly related.

E. S. PLATT M.D.

McLean A. J. *The Transbuccal Approach to the Encephalon* Ann Surg 1928 lxxviii 934

An improved experimental technique is presented for the transbuccal approach to the entire medio-ventral surface of the diencephalon, mesencephalon, metencephalon and myelencephalon. Despite the vascularity of the basilar fossa the operation is practically bloodless. By the procedure described the second, fifth, sixth and twelfth cranial nerves have been cut at their source under direct vision without damage to closely contiguous structures and many hypophysectomies have been done. Lateral column nerves of the medulla are more readily exposed by a posterior fossa or cerebellar exploration. The third and fourth nerves and preoptine hypothalamus are more readily approached by a modified temporal route.

Among the chief main advantages of the technique described are (1) an anatomically controlled approach to the base of the brain through a field of extreme vascularity (2) conservation and exact reapproximation of the nasopharyngeal nasopharyngeal which interposes an intact physiological meningeal barrier as a bar to infection of the meninges (3) the

basal regions and therefore first attack the more exposed marginal fibers situated in those regions the pupillo-motor pathways. This explanation holds also for the common and early appearance of ptosis and can readily explain the slowly developing and varied changes in the pupils which often precede complete rigidity. Such changes reflect the processes in the basal subarachnoid spaces along the optic pathways. The Argyll Robertson phenomenon rarely occurs in the absence of a luetic cause but when it does the hypothesis suggested by the author offers an explanation.

GILBERT C. ANDERSON, M.D.

### SPINAL CORD AND ITS COVERINGS

Stookey B. Tumors of the Spinal Cord in Childhood. *Am J Dis Child* 1928 LXVII 2184

Of 163 tumors of the spinal cord for which operation was performed at the Neurological Institute, New York, in the period from 1910 to 1926 8 occurred in children twelve years of age or under. Six of the 8 spinal cord tumors in children were operated upon since 1922. The increase in the number of such tumors found in children in recent years is attributed by the author to improvement in the diagnosis due mainly to special tests such as the lumbar manometric examination of the spinal fluid.

The postmortem statistics of Schlesinger indicate that neoplasms of the spinal cord are not so rare in children as appears from the literature. In 251 collected cases of spinal cord tumor Schlesinger found 33 in which the neoplasm developed before the age of nine years and twenty seven in which it developed between the ages of ten and fifteen years.

More careful neurological examination and the use of the special tests will allow the recognition of a greater number of spinal cord tumors in children during life. As the neurological signs are frequently vague the special tests are of great importance. In some cases of tumor of the spinal cord in children the condition has been treated as a birth injury and in others as an obscure disease of the cord.

The tumors reviewed by the author are classified into 3 groups: (1) extradural neoplasms mainly within the vertebral canal; (2) intradural neoplasms and (3) paravertebral tumors which had invaded the vertebral canal. Tumors of the third group do not properly belong with tumors of the spinal cord and do not present any difficulty in diagnosis.

There were no tumors from either the meninges or the nerve roots although in the adult the arachnoid fibroblastoma and perineural fibroma are the most common types of cord tumors.

The average ages of the children with primary extradural sarcoma and fibrosarcoma was nine and two-tenths years while that of the children with tumors arising outside the vertebral canal and invading it secondarily was three years. The ages of the children with intramedullary tumors averaged eleven years. In the cases of intramedullary tumor the average duration of the symptoms was

four and six tenths years (greatly increased by the presence of symptoms in 1 case for eleven years) in the cases of extradural tumor twenty one weeks and in the cases of paravertebral tumor ten months.

In 1 of the 3 cases of intramedullary tumor the presenting symptom was pain in the lower back radiating from both shoulders and followed by weakness of the right arm. In another it was weakness of both legs followed by pain in the neck and the lumbar region. In the third it was tilting of the head toward the right and dragging of the right foot. Variability in the presenting symptoms is common in cases of neoplasm of the spinal cord even when the same segment is involved as the long fiber tracts are so compactly arranged that the slightest variation in the compression may involve an entirely different tract.

In all of the 3 cases of extradural tumor the presenting sign was weakness of the legs, the ventrolateral position of the tumor causing pressure on the pyramidal tracts and the ventral motor columns. In all there were also marked pyramidal tract signs such as patellar and ankle clonus, Babinski's reflex and absence of the abdominal reflexes. In 1 case in spite of the pyramidal signs and double ankle clonus there was marked flaccidity of both lower limbs which is usually indicative of severe pressure and a poor prognosis but recovery was as rapid as is usual in cases with spasticity.

In cases of intramedullary tumor the sensory changes are likely to be more marked in the dermatomes supplied by the segments at the level of the tumor than in the more distal dermatomes. The dorsal and ventral muscular masses and their immediate connections are also involved. It is therefore common to see marked sensory changes at the level of the lesion with atrophy and fibrillation of the muscles supplied by the segments involved.

Two of the cases of extradural tumor showed a definite sensory level but in the third there were no sensory changes until a week before operation and no sensory level appeared even after lumbar puncture. The position of the tumor in this case was determined from atrophy in the left shoulder girdle and the extensors of the wrist and finger. None of the patients with an extradural tumor complained of pain. Pain of long duration referred constantly to 1 or 2 segments may indicate that the tumor arises from a nerve root but pain referable to one side of the body or the greater part of an extremity is not uncommonly due to pressure on the spinothalamic tracts. The importance of regional scoliosis and enlargement of the vertebral canal in cases of tumor of the spinal cord has been emphasized by the author in a previous article.

When the lesion is above the sacral segments bladder and rectal incontinence usually indicates severe compression of the cord.

A sign of importance in the diagnosis is exaggeration of the symptoms following withdrawal of the spinal fluid by lumbar puncture which allows the tumor to exert direct pressure on the cord. Lumbar

three years after the accident a hemispherical swelling which was not sensitive to pressure and not fixed to the skin was found in the right temporal region. In the roentgenogram there was a diffuse shadow with a circular transparent zone around the edge. The tumor was chiselled out and removed with a piece of attached dura. Because of the patient's collapse plastic covering of the wound was not possible. After the operation the patient had an attack of epilepsy. Two years later she was well. Examination of the specimen showed a bony exostosis and an endothelioma which had affected mainly the dura but had involved also the lymph tracts of the thickened bone as far as the periosteum. The thickened bone showed in its center an area of apparently normal structure from which the growth had proliferated radially both internally and externally.

In the author's opinion the point of origin of these tumors was the dura where the heaviest tumor mass in the form of a flat plate was found. From here the tumor developed along the lymph tracts of the Haversian canals to the surface of the skull and then spread out in a thin layer. There was no tendency toward infiltration of the galea or the brain; the growth apparently being limited to the region of bony tissue. As a result of the infiltration of the bone tissue there was an irritation of the bone substance which led to hyperostosis.

Because of their infiltrative growth endotheliomata are to be classed with malignant tumors. However their malignancy is relatively slight as is evident from the fact that they show little tendency to recur even when they are not completely removed. They develop most commonly in the anterior part of the skull.

In the differential diagnosis the roentgen demonstration of hyperostosis which usually develops as an endostosis is usually decisive. When hyperostosis is found the possibility of an intracranial tumor should always be considered even when there are no brain symptoms.

The treatment of choice is operation. In bones with a very rich blood supply it is best to remove the exostosis gradually. The growth usually does not extend toward the brain. As a rule the opening in the skull made at operation gives sufficient decompression. Even when the operation is not radical the prognosis is favorable. ROYCE (Z.)

Gurdjian E S and Williams H W. The Surgical Treatment of Intractable Cases of Blepharospasm. *J Am M Soc* 1928 92: 1053.

The authors report three cases of blepharospasm in which no cause could be determined for the condition. The first was treated by neurectomy followed by the injection of alcohol. In the others the treatment consisted in the non-operative injection of alcohol into the upper branches of the facial nerves. In the first case there was complete relief lasting for six months and the treatment was repeated successfully on the return of the symptoms. In the two

other cases the symptoms were relieved incompletely but satisfactorily.

In open neurectomy it is possible to cut or inject as many or as few of the branches as desired and to avoid the parotid gland and duct. The simple injection is quicker, causes no scar and gives relief if it is thoroughly done but is less sure and safe. The relief from both procedures is only temporary but the treatment can be easily repeated when necessary.

The author's method is preferable to injection of the entire nerve in the stylomastoid foramen as it does not paralyze the whole side of the face and it does not remove the entire nerve supply of the orbicularis muscle.

Organic blepharospasm is discussed briefly. A distinction is made between the true spasm and a true spasm. ALBERT S. CHANDLER, M.D.

Ingrar S. On the Pathogenesis of the Argyll Robertson Phenomenon. *Bull Johns Hopkins Hosp* Balt 1928 24: 1-353.

Little is known of the pathology of the Argyll Robertson pupil. It occurs in syphilis of the nervous system particularly cases of tabes and paresis and is often a premonitory symptom noted years before other manifestations of the condition. Syphilitic meningitis is thought not to give this sign so often as the true so-called luetic diseases of tabes and paresis. The latter are not always associated with a meningeal process.

In explanation of the common association of the sign with lues it is not necessary to have recourse to the theory of toxic predilection. There is justification for the assumption that the pupillomotor and visual pathways follow each other closely through the optic nerve, the chiasm and the optic tract. In the posterior part of the diencephalon the pupillomotor pathway diverges from the visual tract and at the level of the geniculate bodies it runs in the anterior arm of the quadrigeminate body proceeding along the lateral border toward the midline. However it has not been clearly shown how the impulses reach the oculomotor nucleus. The efferent arm of the arc is better known. It is fairly certain that certain small cells in the Edinger Westphal nucleus are centers for the innervation of the musculature of the sphincters.

Throughout evolution the optic pathways remain on the surface of the diencephalon. Therefore from comparative anatomy and certain research in connection with the posterior spinal roots we have a right to conclude that fine fibers on the surface represent the pupillomotor pathways, a conclusion of great importance to an understanding of the pathogenesis of pupillary disturbances in meningeal processes involving the surface layers of the diencephalon. Many investigators agree that in degeneration of parenchymatous nature the changes begin in the marginal regions of the optic system and this has been demonstrated by the author.

The meningeal changes associated with the metasyphilitic diseases of the brain have a predilection for the

Angelucci thinks that after paralysis of the cervical sympathetic there is first a dilatation of the vessels followed by hyaline degeneration of the walls and then a contracture of the lumen with subsequent lack of nutrition and resulting atrophy. He believes this process to be the cause of hemi atrophy of the face. In the opinion of Heiligenthal hemi atrophy of the face is due to atrophy of the fatty tissue.

The author reports the three most interesting cases of his series. In one of these the cause of the condition was diagnosed as syringomyelia. This was the case with the Klumpke type of paralysis—paralysis of the inner side of the forearm and of the small muscles of the hand.

The author's findings in the cases reviewed and his conclusions are briefly summarized as follows:

1 Paralysis of the sympathetic nerve is more frequent than is indicated in the literature.

2 In only one case was the cause of the paralysis determined.

3 The difference between the near points of the two eyes was greater in those with the most complete syndrome.

4 The average difference between the pupils was 1.8 mm before the instillation of cocaine and 3 mm afterward.

5 The width of the palpebral fissure averaged 3.5 mm less on the affected side.

6 There were no visible fundus changes.

E S LATT, M.D.

Buehring E. Malignant Neuroblastoma of the Sympathetic (Ueber das bösartige Neuroblastom des Sympathicus). *Arch f path Anat* 1928 cclxviii 300.

The case reported was that of a four year old boy. Microscopic examination at autopsy showed side by side all the developmental stages of the formative cells of the sympathetic viz dense cell clumps with nuclei which could hardly be isolated and without intracellular substance and in other places where the nuclei lay more loosely, rosette formation with a reticular framework which stained yellow with the Van Gieson stain. At several places in the tumor the cells presented less uniformity, even isolated ganglionic cells were seen. The nerve fibers were demonstrated histologically by the Gross modification of the Bielschowsky method.

STAHL (Z)

Brauer, Surgery of the Sympathetic in the Extremities (Langes zur Sympathicuschirurgie an den Extremitäten). *Zentralbl f Chir* 1928 lv 831.

In a case of excessive sweating of the hands and feet which had been treated conservatively without success for years a test injection of novocain into the principal peripheral nerves showed the trouble to be of central origin. It was determined that the central excitation for the left hand ran over the ramus communicans from the eighth cervical to the first dorsal and the excitation for the right hand ran over the ramus communicans from the seventh

cervical to the first dorsal. Resection of eighth cervical to first dorsal ramus communicans on the left side resulted in a complete cure. A few months later a corresponding operation was performed for the feet the ramus communicans from the fourth lumbar to the second sacral being divided. The operation in the cervical region was performed one year ago and the operation on the ganglia of the lumbar sympathetic nine months ago.

The author determined also the skin areas belonging to the individual ramus communicans. He found that the ramus communicans from the seventh cervical supplies the radial portion of the hand and the first two fingers; the ramus communicans from the eighth cervical supplies the last three fingers and the middle of the palm; and the ramus communicans from the first dorsal supplies the ulnar part of the hand. The supply in the vasomotor paths also corresponds to these secretory dermatomes.

By determining the sympathetic dermatomes it is possible to limit operation to the minimum in the treatment of secretory and vasomotor disturbances in the extremities and to cure such conditions by dividing only the ramus communicans belonging to these skin segments.

STAHL (Z)

Rieder W. Investigations by Capillary Microscopy in Periarterial Sympathectomy (Capillarmikroskopische Untersuchungen bei periartereller Sympathektomie). *Arch f klin Chir* 1928 cl 136.

Capillary microscopy and tests of the capillary reflexes with various stimuli confirm the theory that removal of the so called periarterial tissue has no influence on capillary reflexes. Observations at operation under local anesthesia showed that arteries are not equally sensitive to pain at all sites. There are areas in which pain cannot be excited by pinching or by electrical irritation whereas other areas are extraordinarily sensitive to pain.

After resection of the cervical sympathetic or removal of the lowest cervical ganglion there could be observed an increase in the visible capillaries which later disappeared. The circulation was continuous in all of the capillaries. In Raynaud's disease the spasms and stases which were noted before the operation entirely ceased. Also in this case a capillary reflex to mechanical irritation was present after the operation.

STAHL (Z)

## MISCELLANEOUS

Nedelmann E. A Malignant Tumor of the Thymus with Peculiar Metastasis into the Central Nervous System. A Contribution on the Question of Tumor Metastasis by the Cerebrospinal Fluid Route (Zur Klinik eines malignen Thymustumors mit eigenartiger Metastasierung ins Zentralnervensystem. Beitrag zur Frage der Geschwulstmetastasierung auf dem Liquorwege). *Ztschr Neurol* 1928 cxv 539.

A boy three and a half years old became suddenly ill with headache, vomiting and great prostration and when seen by the author on the twelfth day

puncture is more likely to change the neurological signs in cases of extramedullary or extradural tumor than in those of intramedullary tumor.

In examination of the spinal fluid xanthochromia is not seen unless there is a marked increase in the globulin and total protein content. As the diagnosis of tumor of the spinal cord is now made early xanthochromia is found at the Neurological Institute less frequently today than formerly. The author emphasizes that lumbar manometric studies and estimations of the total protein content of the cerebrospinal fluid should be made in the case of every child believed to have a lesion of the spinal cord.

Extradural sarcoma and fibrosarcoma are thought to arise from the peridural tissue within the vertebral canal though at times they appear to invade the canal secondarily. When they are circumscribed and can be completely removed the postoperative results are good.

Intramedullary tumors occur most frequently in the cervical region. This suggests a congenital origin similar to that of such definitely congenital lesions as syringomyelia which is most common in the lower cervical segments. Extradural tumors though frequent in the cervical region are found most commonly in the thoracic region.

Extradural tumors may cause marked symmetrical compression of a number of nerve roots and thereby produce atrophy and segmental sensory disturbances suggesting an intramedullary lesion. In all of the 3 cases of extradural tumors reviewed the level of the lesion was determined correctly but in only 1 was the nature of the process diagnosed.

In recent years the staff of the Neurological Institute has attempted to make a pre-operative diagnosis of extradural neoplasm, extramedullary intradural neoplasm, and intramedullary neoplasm.

The operative results have been gratifying especially in cases of extradural tumors. Even in cases of infiltrating tumors of the intramedullary group improvement has been obtained.

In all cases of extradural sarcoma radiorium is given in the hope of preventing recurrence whether or not removal has been apparently complete. No recurrence has developed in the 4 cases reviewed.

When there is doubt as to the diagnosis of tumor of the spinal cord an exploratory laminectomy should be performed. I S P ATT MD

### PERIPHERAL NERVES

Platt H. The Operative Treatment of Traumatic Ulnar Neuritis at the Elbow. *Surg Gynec & Obst* 1918 XLVI 822

For mild forms of ulnar neuritis the author recommends immobilization of the elbow joint as this is often sufficient to bring about a cure. For severe and persistent neuritis late ulnar palsy, incomplete lesions of the ulnar nerve at the elbow in which there is incongruity between the nerve and its bed, he advocates his operation of anterior transposition of the ulnar nerve.

With the patient recumbent the upper arm is placed vertically and the elbow and wrist are sharply flexed. An inverted Y skin flap is then freed back by cutting above the elbow behind the line of the internal epicondyle at the elbow over the true line of the groove and below in the course of the nerve. The nerve is first freed above and then below in the groove in the whole extent of the wound and is drawn forward over the epicondyle. A new bed is made for it by dividing the aponeuroses of the common flexor origin from the epicondyle. The nerve is placed in this gutter and the several layers are closed above it.

After the operation the elbow is slung in moderate flexion for ten days and movement of the fingers is encouraged immediately.

In over 100 cases the results were most gratifying. LEO M. DAVENPORT M.D.

### SYMPATHETIC NERVES

Scarlett H. W. The Frequency of the Claude Bernard Horner Syndrome. *Am J Ophth* 1914, 12 961

The author reviews sixteen cases of cervical sympathetic nerve lesions producing the Bernard Horner syndrome.

The most common causes of the condition are cervical ribs, enlarged cervical glands, aortic mediastinal tumor, tumor of the cervical cord, involvement of the apex of the lung and injuries to the brachial plexus roots. Pancoff has reported oculosympathetic raptures in three cases of diffuse infiltrating endothelioma of the pleura and one case of primary carcinoma of the upper lobe of the lung. During the war trauma to the cervical sympathetics was common.

In all of the cases reviewed enophthalmos, ptosis and narrowing of the palpebral fissure were present. In one case miosis was absent possibly because fibers for the dilator muscle of the iris leave the cilio-spinal center by more than one pathway and therefore are not always completely involved.

Hypotony was found in more than one third of the cases, the tension averaging 3.5 mm. less than that of the other eye. De Schweinitz suggests that vascular or muscular changes may be the cause of the hypotony.

In the affected eye the near point averaged 3 mm. less than in the other eye and in all but four cases vision was slightly below that of the normal eye. In two cases heterochromia iridis had been present as long as the patient could remember. According to Angelica heterochromia is due to trophic changes resulting from the altered effect of the paralyzed cervical sympathetic nerve on the vessels of the iris. Callahan believes that in infants the pigment cells are easily absorbed. In Jackson's opinion the ciliary ganglion is probably the important site of the lesion.

Hemifacial atrophy of the face occurred in nine cases, unilateral flushing in five and the Klumpke type of paralysis in one.

Angelucci thinks that after paralysis of the cervical sympathetic there is first a dilatation of the vessels followed by hyaline degeneration of the walls and then a contracture of the lumen with subsequent lack of nutrition and resulting atrophy. He believes this process to be the cause of hemi atrophy of the face. In the opinion of Heiligenthal hemi atrophy of the face is due to atrophy of the fatty tissue.

The author reports the three most interesting cases of his series. In one of these the cause of the condition was diagnosed as syringomyelia. This was the case with the Klumpke type of paralysis—paralysis of the inner side of the forearm and of the small muscles of the hand.

The author's findings in the cases reviewed and his conclusions are briefly summarized as follows:

1. Paralysis of the sympathetic nerve is more frequent than is indicated in the literature.
2. In only one case was the cause of the paralysis determined.
3. The difference between the near points of the two eyes was greater in those with the most complete syndrome.
4. The average difference between the pupils was 1.8 mm. before the instillation of cocaine and 3 mm. afterward.
5. The width of the palpebral fissure averaged 3.5 mm. less on the affected side.
6. There were no visible fundus changes.

E. S. PLATT, M. D.

Buelbring E. Malignant Neuroblastoma of the Sympathetic (Ueber das bösartige Neuroblastom des Sympathicus) *Arch f. path. Anat.* 1928 cclxviii 300

The case reported was that of a four year old boy. Microscopic examination at autopsy showed on one side all the developmental stages of the formative cells of the sympathetic viz. dense cell clumps with nuclei which could hardly be isolated and without intracellular substance and in other places where the nuclei lay more loosely in rosette formation with a reticular framework, which stained yellow with the Van Gieson stain. At several places in the tumor the cells presented less uniformity even isolated ganglion cells were seen. The nerve fibers were demonstrated histologically by the Gross modification of the Bielschowsky method.

STÄHL (Z)

Braeucker. Surgery of the Sympathetic in the Extremities (Einiges zur Sympathicuschirurgie an den Extremitäten) *Zentralbl. f. Chir.* 1928 lv 831

In a case of excessive sweating of the hands and feet which had been treated conservatively without success for years a test injection of novocain into the principal peripheral nerves showed the trouble to be of central origin. It was determined that the central excitation for the left hand ran over the ramus communicans from the eighth cervical to the first dorsal and the excitation for the right hand ran over the ramus communicans from the seventh

cervical to the first dorsal. Resection of eighth cervical to first dorsal ramus communicans on the left side resulted in a complete cure. A few months later a corresponding operation was performed for the feet the ramus communicans from the fourth lumbar to the second sacral being divided. The operation in the cervical region was performed one year ago and the operation on the ganglia of the lumbar sympathetic nine months ago.

The author determined also the skin areas belonging to the individual ramus communicans. He found that the ramus communicans from the seventh cervical supplies the radial portion of the hand and the first two fingers, the ramus communicans from the eighth cervical supplies the last three fingers and the middle of the palm, and the ramus communicans from the first dorsal supplies the ulnar part of the hand. The supply in the vasomotor paths also corresponds to these secretory dermatomes.

By determining the sympathetic dermatomes it is possible to limit operation to the minimum in the treatment of secretory and vasomotor disturbances in the extremities and to cure such conditions by dividing only the ramus communicans belonging to these skin segments.

STÄHL (Z)

Rieder W. Investigations by Capillary Microscopy in Periarterial Sympathectomy (Capillarmikroskopische Untersuchungen bei periartereller Sympathektomie) *Arch. f. klin. Chir.* 1928 cl 136

Capillary microscopy and tests of the capillary reflexes with various stimuli confirm the theory that removal of the so called periarterial tissue has no influence on capillary reflexes. Observations at operation under local anesthesia showed that arteries are not equally sensitive to pain at all sites. There are areas in which pain cannot be excited by pinching or by electrical irritation whereas other areas are extraordinarily sensitive to pain.

After resection of the cervical sympathetic or removal of the lowest cervical ganglion there could be observed an increase in the visible capillaries which later disappeared. The circulation was continuous in all of the capillaries. In Raynaud's disease the spasms and stases which were noted before the operation entirely ceased. Also in this case a capillary reflex to mechanical irritation was present after the operation.

STÄHL (Z)

## MISCELLANEOUS

Nedelmann E. A Malignant Tumor of the Thyroid with Peculiar Metastasis into the Central Nervous System. A Contribution on the Question of Tumor Metastasis by the Cerebrospinal Fluid Route (Zur Klinik eines malignen Thyreumtumors mit eigenartiger Metastasierung ins Zentralnervensystem. Beitrag zur Frage der Geschwulstmetastasierung auf dem Liquorwege) *Ztschr. Neurol.* 1928 cv 539

A boy three and a half years old became suddenly ill with headache, vomiting and great prostration and when seen by the author on the twelfth day

showed a left facial paresis and other signs of involvement of the nervous system. Heine Medun's disease was suspected at first but the spinal fluid contained 2,450 cells per cubic millimeter and among these there were indisputable tumor cells.

In the further course of the condition there appeared meningitic symptoms and phenomena of functional impairment of the basal cranial nerves and of spinal cord injury particularly in the cauda equina. Eight weeks after the appearance of the first symptoms the child died.

Autopsy revealed a malignant tumor of the thymus with among other metastases a secondary growth in the choroid plexus of the third ventricle. From this point the central nervous system had been flooded with tumor cells by way of the cerebrospinal fluid circulation. Particularly remarkable were the thickening and spindle shaped swelling of the nerves emerging at the base of the brain and of the spinal nerves especially in the region of the cervical cord and the cauda equina.

POLYA (Z)

Woolfard H. H. *The Comparative Anatomy of Epicritic and Protopathic Sensation*. *Med J Australia* 1928 II 544

After reviewing the objections to Head's theory of epicritic and protopathic sensation the author mar-

shals facts from comparative anatomy to support this theory. He believes that in the animal scale the reptilian nervous system is the first to show evidence of the segregation of the epicritic and protopathic systems. In the reptile there are a considerable number of neuro-epithelial nerve endings in the skin among the free naked endings in the deeper cells.

The reptile is the first vertebrate in which definite posterior columns end in nuclei corresponding to the gracile and cuneate. Homologues to the spinothalamic tracts and medial geniculate body are demonstrable (protopathic system). In the thalamus this system reaches a large medial nucleus. There also appears in the reptile for the first time in the animal series a lateral thalamic nucleus receiving fibers corresponding to the mesial fillet (epicritic system). Finally the reptile carries the first indications of a neocortex which is connected with the thalamus by fibers from the epicritic system. Corresponding changes in the cerebellum, red nucleus, corpus striatum, etc. are described all of which Woolfard cites in support of Head's theory.

Woolfard then shows how these early beginnings in the reptile grow to ever increasing importance in the animal series in correspondence with the development of the epicritic system.

LEO M. DAWSON, M.D.

# SURGERY OF THE CHEST

## CHEST WALL AND BREAST

Iselin H. Postoperative X Ray Treatment of Cancer of the Breast (Die Nachbehandlung des operierten Brustkrebses durch X Strahlen) *Schweizer med Wchnschr* 1928 lxvii 693

Handley demonstrated that cancer of the breast extends almost exclusively by way of the lymphatics. He called this continuous extension permeation.

Iselin believes that the treatment of cancer of the breast is surgical but he agrees with DeQuervain and Hots that in early cases the procedure may be limited to amputation of the breast with the skin flaps centering about the tumor wide excision of the pectoralis fascia and clearing out of the axilla. In advanced cases he removes the pectoral muscle.

As soon as possible after the operation in the author's cases systematic irradiation of the entire chest, clavicular fossae and epigastrium is done as a prophylactic measure. In order to protect all sound tissues including the skin and blood a weak filter of 1 mm of aluminum is used. The dosage is measured in Sabouraud units as Iselin has seen the biological effectiveness and reliability of this method demonstrated in numerous cases. One Sabouraud unit is given at a treatment. The raying is begun in the supraclavicular and infraclavicular fossae and in the axilla both of these fields being treated from in front and from behind. In the raying from in front from 2 to 3 mm of aluminum and a distance of 24 cm are used whereas in the raying from behind from 3 to 5 mm of aluminum and a distance of 30 cm are used. Only after the lapse of one week is the field of operation irradiated. In the treatment of this area a filter of 1 mm of aluminum and a distance of 24 cm are used. The lower part of the chest the flank and the entire back are treated in the same way.

After a period of at least three weeks the affected side of the chest is re-irradiated field by field with the use of a filter of 2 or 3 mm of aluminum. The unaffected side of the chest is then treated. In the cases of thin patients a 2 mm filter of aluminum is sufficient but when the chest is thick the exposures must be made from various sides with a filter of 5 mm of aluminum and a distance of 50 cm. The epigastrium is treated with from 1 to 2 Sabouraud units  $\frac{1}{2}$  unit being given at a dose and a filter of 2 mm of aluminum being used. The sternum is treated twice 1 Sabouraud unit and a filter of 5 mm of aluminum being used. The time required for the entire course of treatment depends upon the findings.

By this X ray treatment the results of operation in the surgical clinic of Basle have been greatly improved. In cases treated during the period from

1906 to 1913 without irradiation freedom from recurrence and metastasis was obtained for three years in 18 per cent and for five years in 12 per cent whereas in cases treated with irradiation (twelve operated upon radically eighteen not operated upon radically) 517 cases of recurrence with metastases to the lymph glands a cure was obtained for three years in 39 per cent and for five years in 30 per cent. In 1927 seven of the twelve patients who were treated in 1918 were in perfect health two had died from carcinoma and two had died from other causes. From the point of view of prognosis the medullary carcinoma was found to be the most benign and the scirrhous carcinoma the most malignant.

BRUNNER (Z)

## TRACHEA LUNGS AND PLEURA

Prioleau W. If Tracheotomy Technique and After Care of the Patient *Surg Gynec & Obst* 1928 xlvii 848

In the author's cases in which tracheotomy is to be performed the operative field is infiltrated with 24 per cent novocain if time permits. The neck is slightly extended and a transverse incision from 4 to 6 cm in length made about 2 or 3 cm above the sternoclavicular junction. After separation of the fascia and muscles the tracheal incision is made between the fourth and fifth or the third and fourth rings. A low tracheotomy is preferable to a high tracheotomy as it is more comfortable and heals quickly and a high tracheotomy may cause permanent injury to the larynx. Before inserting the tube Prioleau allows the patient to take a few deep breaths in order to cough out the accumulated mucus or he removes the mucus with an aspirator. The muscles, fascia and skin are approximated with interrupted catgut sutures and a dressing is applied around but not over the tube.

After this operation there is more need for constant and expert attention than after any other surgical procedure. When feasible the tube should be removed at the end of about three hours. If the patient is unable to take nourishment normally a stomach tube should be introduced for three or four days.

GEORGE R. McCLIFF, M.D.

Mather J. H. and Coope R. The Accessory Lobe of the Azygos Vein *Brit J Radiol* 1929 i 481

Most roentgenologists have been puzzled when examining roentgenograms of the chest by the occasional finding of a fine convex line beginning at the right apex curving downward and inward toward the mediastinum and ending just below the level of the costal cartilage of the first rib in a dense comma shaped shadow.



Bendick and Wessler were able to study at autopsy two lungs in which they had noticed this shadow in roentgenograms made during life. They were able to show conclusively that the fine convex line marks off an accessory lobe of the right lung known as the lobe of the azygos vein.

Variations in the pulmonary fissures are known to be fairly common. The term 'azygos lobe' has been applied to several accessory lobes.

The accessory lobe of the azygos vein is formed by the partial cutting off of a portion of tissue from the upper lobe of the right lung by a sort of meso azygos in the free edge of which the azygos vein lies. This lobe is rare.  
HOWARD A. MCKENNEY MD

**Graeford C. Two Cases of Obstructive Pulmonary Embolism Successfully Operated Upon.** *Acta chirurg Scand* 1928 Lxv 172

Following a report of two cases of pulmonary embolism in which Trendelenburg's operation was performed successfully the author states that Trendelenburg's operation is a typical procedure which in most cases of embolism can be quite well carried out in the time at the surgeon's disposal. Interference with the left pleura is not necessary and should be avoided. After removal of the embolus all cut vessels in the chest wall should be carefully tied. The rubber tube around the vascular pedicle should never be pulled tight; its purpose is to pull the artery into the wound.

The incision in the artery should be about 2 cm long. The stagnated blood should be let out in order to unload the heart and to evacuate any thrombi that may be lodged in the heart or in the vessels peripheral to the heart. A suction arrangement is of great aid in the operation. Injections of adrenalin directly into the heart and aorta are of very great importance.

**Nystrom G. Experiences in Three Cases in Which the Trendelenburg Operation Was Done for Pulmonary Embolism.** (*Erfahrungen in drei nach Trendelenburg operierten Fällen von Lungenembolie*). *Acta chirurg Scand* 1928 Lxv 110

The first case reported was that of a woman forty-eight years of age who was operated upon for hemorrhoids and died thirty hours later. The second was that of a woman forty-five years of age who was subjected to cholecystectomy and died five hours after the operation. The third was that of a man thirty-five years of age who was subjected to appendectomy and is now well.

In the first case a typical Trendelenburg operation was done for the removal of the embolus. In the others an extrapleural exploration was done in one instance after resection of the sternal border (unsatisfactory) and in the other after resection of the third costal cartilage in addition to the sternal border (good exposure).

In one case small ruptures had been produced in the intima of the pulmonary artery by too tight application of the tourniquet.

In Case 1 the blood stream was cut off for sixty seconds; in Case 2 for sixty-five seconds; and in Case 3 that of the patient who was saved for one hundred and four seconds.

In the last case the embolus was removed with the aid of a specially constructed suction tube.

In Cases 1 and 3 adrenalin was injected into the aorta to stimulate the heart.

**Eloesser L. Congenital Cystic Disease of the Lung.** *Surg Clin N Am* 1928 viii 1361

Eloesser reports a case of congenital cystic disease of the left lung in a boy twenty years of age. He quotes Sauerbruch as suggesting that this anomaly may be caused in an early stage of development by a duct of Cuvier which stretching unusually sharply across the hilum of the embryonal lung bud constricts and presses upon the latter. The more frequent occurrence of bronchiectatic anomalies on the left side may be explained by the relation between the right and left ducts of Cuvier.

In congenital cystic disease of the lung severe attacks of dyspnea, cyanosis, and choking occur and frequently terminate fatally. When there is a free communication between the cysts and the bronchi, the signs are those of a wide open internal pneumothorax. When there is no communication at all, the cyst usually a smaller one, contains a mucous secretion and causes the varied symptoms of a benign intrathoracic tumor or an abscess. In some cases however the condition is symptomless. There is often a cough with little or no expectoration.

The signs are those of a pneumothorax with or without pressure and with mediastinal deviation if the cyst is open. If the cyst is closed the phenomena may be those of intrathoracic tumor, empyema, or abscess. Fever and toxicity depend upon the presence of infection.

The diagnosis is difficult and often impossible. When a communication with a bronchus exists, a roentgenogram made with lipiodol will prove that the oil lies in the lung and not in the pleura, and that the condition is a cyst and not a pneumothorax. If the cyst contains air but does not demonstrably communicate with the bronchus, the presence in the roentgen films of a shadow corresponding to an interlobar septum will reveal the nature of the condition since in pneumothorax and marked collapse of the lung the interlobar septum would also be collapsed.

The condition must be differentiated from echinococcus cyst, dermoid cyst, and old encapsulated tuberculous empyema.

In infants with signs of increased intrathoracic tension and mediastinal deviation, the cyst should be opened by the introduction of a valve tube or by marsupialization. In older patients wide opening of the cystic lung with subsequent more or less complete removal of the lobe and suture of the communicating bronchus is indicated. Uninfected cysts without pressure symptoms may be left untreated.

JACOB M. MORSE MD

Thorpe E S Chronic Bronchiectasis in Childhood *Pennsylvania M J* 1928 xxix 168  
 Moore W F Bronchoscopic Treatment of Bronchiectasis in Children *Pennsylvania M J* 1928 xxxi 170

THORPE states that in cases of bronchiectasis in children under thirteen years of age he found the most common precursor to be bronchopneumonia. Other conditions of importance in the etiology were pertussis, measles, and disease of the accessory nasal sinuses. In about 65 per cent of the cases there was residual epistaxis in the tonsils, sinuses, or middle ear. Rickets was an important factor in nearly all of the cases as it reduced the general resistance. In half of the bronchoscopically removed material the predominant organism was the streptococcus.

During the earlier stages bronchoscopy revealed slight annular dilatation of the bronchi, loss of the gland structure, and residual secretion after coughing. Roentgenograms showed slight interstitial and bronchial prominence, obliteration of the cardiohepatic angle, and evidences of chronic pleurisy and diaphragmatic dysfunction. The principal symptom was a paroxysmal cough brought on by a change of position. Hemoptysis was frequent. The physical signs were those of pulmonary fibrosis with bronchitis. In nearly 50 per cent of the cases there was clubbing of the fingers.

The most common complications were bronchopneumonia and pleurisy. Renal disease occurred in 30 per cent of the cases. Anemia was found in one half of the cases and undernutrition was common.

MOORE believes that bronchiectasis in children almost invariably follows an acute infection, and that disease of the nasal accessory sinuses and laryngotracheitis are of little importance in the etiology.

One hour before a bronchoscopic examination is made, in Moore's cases the patient is given from 1/16 to 1/8 gr of morphine sulphate. Secretions are sent to the laboratory at once for the preparation of a vaccine. Lipiodol is injected through the bronchoscope under fluoroscopic control in quantities of from 5 to 20 c cm. The vaccine is given every fourth day and bronchoscopic treatment every seven days. Twenty per cent gonemol or 1 per cent monochlorophenol may be instilled in amounts of 5 c cm. Constrictions should be dilated and new growths removed.

Early cases respond best to bronchoscopic treatment and those with a small localized area have the best prognosis. Bronchoscopy furnishes the drainage which is necessary in this condition.

WILLIAM A BRAMS M D

Whittemore W The Treatment of Chronic Bronchopulmonary Suppurative Lesions Limited to One Lobe of the Lung *New England J M D* 1928 cxix 1213

The author reviews his experience at the Massachusetts General Hospital in the treatment of chronic suppurative bronchopulmonary infection with dilatation of the bronchi limited to one lobe

and not due to the tubercle bacillus. The only curative procedure in this condition is surgical removal of the involved lobe. Bronchoscopy is of value chiefly for the aspiration of pus from the bronchial tree, the dilatation of strictures, and the removal of granulation tissue that is tending to obstruct the bronchus. The author believes that the injection of lipiodol is unnecessary for the diagnosis in most cases and is dangerous as it may carry the infection to the sound lung. Artificial pneumothorax is seldom beneficial.

GRAMAM'S cautery lobectomy has yielded good results, especially in involvement of the lower lobe with atelectasis. Amputation of a lobe of the lung within the pleural cavity has been abandoned because of its very high mortality.

The operation advocated by the author is done to shut off the blood supply to the lobe, fix the mediastinum, and retard the infection of the pleural cavity which always follows a lobectomy for a septic condition. It is performed under nitrous oxide oxygen and ethylene anesthesia. The pleural cavity is opened, the lung is examined, and sections of a sufficient number of ribs are removed to permit delivery of the diseased part of the lobe from the pleural cavity. The lung is then firmly sutured to the muscles of the chest wall and a No. 20 French catheter is inserted to the root of the lung. The wound is closed as tightly as possible. The pleural cavity is drained by the catheter. The lobe becomes necrotic in about ten days and sloughs off in from three to five weeks.

In nine cases operated upon in this way there were six complete cures and two deaths.

WILLIAM A BRAMS M D

## HEART AND PERICARDIUM

Stevenson G H and Marshall A J Rupture of the Heart from a Pyæmic Abscess in the Myocardium *Glasgow M J* 1928 cx 33

The case reported was that of a boy nine years of age who was struck on the left ankle by a stone. Three days later septic blisters appeared at the site of the injury, and a few days after the formation of the blisters the picture of osteomyelitis with septicæmia developed.

At operation free incisions were made over the fibula, but the periosteum and bone did not appear to be involved. After the operation multiple abscesses developed and the pulse remained 120 although the general condition seemed to improve. Death occurred suddenly.

At autopsy the pericardium was found distended by pus and blood from a ruptured abscess of the wall of the left ventricle which had traversed the entire thickness of the ventricular musculature. Two other abscesses were present in the same region but did not entirely penetrate the wall. Cultures of the pus yielded staphylococcus aureus.

Only nineteen similar cases have been reported in the literature.

WILLIAM A BRAMS M D

Alexander E G Suppurative Pericarditis from the Surgical Viewpoint *Ann Surg* 1923 lxxviii 801

Alexander gives a historical account of the efforts made to treat suppurative pericarditis surgically. The first successful pericardiotomy was performed in 1819 by Romero of Barcelona for non-suppurative pericardial effusion. Two of the 3 patients upon whom he performed this operation recovered. In 1844 Hilsman performed the first successful pericardiotomy for suppurative pericarditis. Since then there have been reported a total of 176 pericardiotomies for suppurative pericarditis with 76 recoveries and 55 deaths.

Suppurative pericarditis is usually a secondary disease. Most commonly it follows pneumonia and rheumatic fever but may be associated with or follow other conditions such as tuberculosis, osteomyelitis, puerperal sepsis, gonorrhea, scarlet fever, typhoid fever, meningitis, malaria, erysipelas and leukemia. It may be a terminal complication in gout, chronic nephritis, arteriosclerosis, scurvy, pleurisy, aneurism, diabetes and various other chronic illnesses including certain types of hepatic cirrhosis.

Primary pericarditis is usually due to external trauma but cases have been reported in which it was caused by an injury from within such as perforation of the esophagus or the stomach through the diaphragm.

The types of microorganisms found include pneumococci, Koch's bacillus, bacillus pyocyaneus, bacillus welchii and other pyogenic cocci and bacilli. The condition is most frequent between the sixth and twenty-fifth years of age. Pneumonia is responsible for most cases of purulent pericarditis at any age.

The physical signs of pericardial effusion depend upon a disturbance of anatomical and physiological relations resulting from the accumulation of fluid in the sac. Muffled heart sounds are characteristic. An accumulation of 750 c.c. of fluid may cause the disappearance of all traces of friction rub even at the base and the apex where frictions usually persist longest. An increase in the extent and a change in the shape of the area of precordial dullness noted on percussion are among the most trustworthy diagnostic signs. In children precordial bulging is suggestive. According to Williamson downward displacement of the left lobe of the liver is one of the earliest signs. An accumulation of from 500 to 600 c.c. causes a displacement of 2.5 cm. The x-ray is not of much aid in the diagnosis as the patient is too ill to permit a satisfactory roentgen examination. The symptoms are due to the mechanical enlargement of the pericardial sac in the thoracic cavity, the presence of pus associated with toxemia and reflexes due to irritation of the phrenic nerve and the ganglia and nerves of the intercostal plexus.

The diagnosis is made certain by the finding of pus on exploratory puncture or incision but a probable diagnosis can be reached from a careful

consideration of the etiology, the course of the fever, the cardiac muscle symptoms, the general condition, precordial edema, a high leucocyte count and x-ray evidence of fluid in the pericardial sac.

The treatment is drainage of the pus by wide exposure of the pericardial sac. The incision should be made to the left of the sternum as low down as possible because the lowermost part of the pericardium lies toward the left and because the sac is more likely to be uncovered by the overlapping pleura on this side. Many operations have been devised in accordance with these principles. Resections of the fifth, sixth and seventh costal cartilages either alone or in pairs and in some instances with resection of portions of the sternum have been suggested. Alexander found excision of the fifth and sixth costal cartilages to be sufficient in his cases.

Local anesthesia should be employed and special attention paid to the anesthesia of the pericardium before the pericardial incision is made. Rubber tissue drains inserted after exploration of the sac with the finger have been found satisfactory. Some surgeons advise irrigation with Dakin's solution or normal saline solution but Alexander has not found this necessary.

The author reports 4 cases. The first case illustrates the difficulties in diagnosis. Operation revealed enormous dilatation of the heart but no fluid in the pericardial sac. This was a case of rheumatic fever. The patient recovered in spite of the operation but cardiac decompensation persisted.

In the second case the suppurative pericarditis followed a lobar pneumonia. Complete recovery resulted.

In the third case also the condition followed a pneumonia. The patient survived two months after the operation and during that time there was intermittent drainage of pus through a catheter introduced into the pericardial sac.

The fourth case was that of a girl of six years who became ill with symptoms of septicaemia. Operation was performed ten days later after x-ray examination had revealed evidence of pericardial effusion. Fifty cubic centimeters of a turbid fluid showing pus cells were removed. Recovery was complete.

MARCEL E. LICHTENSTEIN, M.D.

## ESOPHAGUS AND MEDIASTINUM

Beatty C C Congenital Stenosis of the Esophagus *Brit J Child Dis* 1923 xxv 237

The author reviews in detail fifty cases of congenital stenosis of the esophagus which were recorded in the literature up to 1926 and reports four more.

There are two varieties of this rare anomaly: (1) a membranous type with partial occlusion of the lumen by a fold of normal mucous membrane and (2) a non-membranous type with a localized reduction of the size of the esophagus. The stenosis may be situated anywhere in the esophagus but its most common sites are the upper and lower ends.

In congenital stenosis there are no pathological changes in the walls of the œsophagus such as are found in acquired stenosis but there may be hypertrophy and dilatation above the obstruction. As a rule congenital stenosis is not accompanied by other congenital abnormalities.

The symptoms of congenital stenosis usually begin in infancy most commonly at the time of weaning. The most characteristic symptom is regurgitation of unchanged food within a few minutes after its deglutition without pain or nausea.

Adults with congenital stenosis of the œsophagus may be well developed and well nourished but in children and adolescents some degree of infantilism is not uncommon.

Roentgenography and œsophagoscopy are invaluable in the diagnosis.

When treatment is given the prognosis in the membranous type is good, complete recovery being usually possible. In the non-membranous variety the prognosis is not unfavorable as regards life but restriction of solid food is generally necessary.

The best treatment in the membranous variety is gradual dilatation with bougies controlled by œsophagoscopy until the membrane has been destroyed.

In the non-membranous form dilatation is unlikely to be successful and is attended by considerable risk of rupturing the œsophagus. A few successful results following radical operations have been reported. In a case of stenosis at the lower end of the œsophagus it may be necessary to consider excision.

MANUEL E. LICHTENSTEIN M.D.

### MISCELLANEOUS

Guion C. M. and Mearns F. S. Chest Pains. *Med Clin N. Y.* 1928 xii 623

The authors discuss the causes and treatment of angina pectoris. Attempts have been made to block the pathways of pain by surgical measures. Cases

have been reported in which the pain ceased after anesthetization of the second and third dorsal nerves on the affected side. However the relief was only temporary. In 1920 Jonnesco reported a case in which he obtained a cure by resecting the left cervical sympathetic. Coffey and Brown completely relieved the pain by cutting the superior cardiac nerve and the main trunk of the sympathetic below the superior cervical ganglion.

As the pain is a danger signal warning of exhaustion of the heart these measures should be used only after all other efforts to give relief have failed.

Reflex angina begins below the diaphragm possibly in the gall bladder. Cardiospasm and pyloric spasm can cause intense pain beginning in the epigastrium and radiating up the sternum and out into the jaws.

HOWARD A. MCKNIGHT M.D.

McPhedran F. M. and Weyl C. N. The Value of Synchronization in the Accurate Diagnosis of Chest Diseases. *Radiology* 1928 xi 458

As applied to roentgenography of the chest synchronization means making exposures at a selected phase of the cardiac cycle. Pairs of films thus exposed in the same phase are truly stereoscopic.

Cardiac movements, the pulse wave within the pulmonary arterial tree and the vibration of the pulse set up in the peripheral lung are responsible for many hilum shadows which are variously interpreted.

The authors have devised a method whereby with the time of exposure cut to one fortieth of a second and accurately timed as to the cardiac phase clear plates may be obtained free from the blurry margins so commonly seen.

This method offers an improvement in the chest technique which may change the interpretation of lung markings. It constitutes also a delicate test for cardiac failure comparable with early ophthalmoscopic examination for changes in the circulation.

GEORGE A. COLLETT M.D.

# SURGERY OF THE ABDOMEN

## ABDOMINAL WALL AND PERITONEUM

**Rosenblatt M S and Meyers M** Muscle Fascia Suture with Preserved Fascia and Tendon  
*Surg Gynec & Obst* 1928 xlviii 836

In experiments on dogs Rosenblatt and Meyers carefully removed the loose areolar tissue from the rectus muscles and then sutured them to Poupart's ligament under strong tension to determine what may be expected in the way of union under tension. Preserved ox fascia and tendon and autogenous fascia were used as suture material.

Both the dead fascia and the autogenous fascia gave very firm union. The tendinous material gave less firm union and was more difficult to use as it was inelastic, hard and apt to be more bulky. The union obtained with the autogenous fascia was no firmer than that obtained with the dead fascia.

At necropsy the fascia suture appeared smaller than when it was introduced and there were dense fibrous growths between the suture and the muscle and Poupart's ligament. When tendon was used no reduction in the size of the suture was noted and the fibrous ingrowths were fewer.

The microscope showed that the fascia and tendon grafts had caused a foreign body reaction but very little round cell reaction. Connective tissue cells had invaded the grafts and bound them to the muscles and fascia. Marked vascularization of the grafts had taken place.

The authors conclude that the dead fascia graft is of value in difficult herniotomies.

LOUIS F GAMBER, M.D.

**Wehlik M** Inflammatory Diseases and Hematomata of the Anterior Abdominal Wall (Ueber entzündliche Erkrankungen und Haematome der vorderen Bauchwand) *Acta chirurg Scand* 1928 lxxii 552

In the period from 1921 to 1927 inclusive twenty cases of disease of the anterior abdominal muscles were observed in the surgical hospital clinic at Dorpat. Three were of traumatic and seventeen of metastatic origin. The causes were:

- 1 Traumatic rupture of the anterior abdominal muscles without suppuration.
- 2 Spontaneous rupture of the muscles as a result of degeneration or atrophy.
- 3 Spontaneous rupture of the epigastric vessels due to acute or chronic injuries of their walls.
- 4 Primary foci of infection and pyogenic mixed infections forming metastases. To this group belong also the so called idiopathic cases which are metastases from a latent focus of infection.

By causing irritation of the parietal peritoneum and consequent inflammatory peritonitis ruptures

and inflammatory conditions of the abdominal muscles of acute onset may simulate acute intra-abdominal disease. In cases of abscesses and hematomata in the rectus sheath it is important to determine whether the lesion is located to the right or the left of the midline and to note the sharp limitation of the swelling at the tendinous insertion of the muscle. The tumor can be moved sideways through the relaxed abdominal muscles but remains immobile when the muscles are rigid.

In the twenty cases reviewed the rectus muscle was involved most frequently. In four cases primary foci of infection besides influenza and pneumonia were found and in one case a puerperal infection was present. In three cases the condition was of purely traumatic origin and in seven its origin could not be determined.

**Bailey H** Strangulated Femoral Hernia *Brit J* 1928 ii 1933

The author compares the old lower operation with the Lothsen operation for femoral hernia. The disadvantages of the lower operation are summarized as follows:

- 1 Resection and anastomosis are impossible within the limits of the wound.
- 2 A loop of bowel may be reduced extraperitoneally.
- 3 The bladder is in danger of injury.
- 4 The loop of bowel may retract within the abdomen before it can be inspected.

The technique of the Lothsen operation is described. Particular attention is given to placing the deep sutures through Cooper's ligament and the peritoneum. It is important to keep the left index finger in contact with the femoral vein to protect this vessel. The uterine arteries are carried through the conjoined tendon and when tied bring the structure into intimate contact with the iliopectoral line.

In seventy cases treated by the lower method there were five recurrences and four deaths, whereas in thirty cases treated by the Lothsen method there were two recurrences and one death.

The operation of Hey Groves in which Poupart's ligament is split has certain advantages over the lower method. The author performed this operation in seven cases with two deaths. Of the four patients who have been traced none has developed a recurrence.

WILLIAM J PICKETT, M.D.

**Schäfer W** The Determination of the Vitality of Leucocytes in Peritoneal Exudate (Zur Färbung der Vitalität von Leukocyten in Peritonealexsudat) *Deutsche Ztschr f Klin* 1928 cxx 250

The author determined the vital staining capacity of the pus cells in the peritoneal exudate in about

fifty cases of appendicitis. Undamaged cells did not take colloidal dyes such as Congo red or trypan blue but damaged cells absorbed these dyes. There appeared to be a relation between the staining capacity of the leucocytes, the anatomical changes in the abdomen, and the duration and virulence of the infection. It was possible to judge the processes in the abdomen from the number of damaged cells. The number of damaged cells was greater in cases of intra abdominal abscess than in those of fresh perforation. This finding was in agreement with the more dangerous clinical picture and higher mortality in cases of intra abdominal abscess.

The conflict of the organism against the infection was shown by the staining reaction when the living uncolored cells were compared with the damaged stained cells. Such a comparison permitted certain conclusions to be drawn with regard to the prognosis. A single examination during the operation gave information as to the defensive powers of the body. In acute phlegmonous appendicitis the number of stained leucocytes never exceeded 10 per cent. In gangrene and perforation the number of damaged leucocytes ranged from 10 to 50 per cent. In perforated appendicitis with general peritonitis there were hardly any unstained cells. In old appendiceal abscesses all of the cells were stained, whereas in early cases from 30 to 60 per cent showed staining.

KOENIG (4)

Dudley G S Endothelioma of the Peritoneum  
*Ann Surg* 1928 LXXVIII 1110

The patient whose case is reported was a woman who had an attack of pleurisy in 1918 when she was seventeen years old and in 1921 was believed to have tuberculous peritonitis. In 1922 she was operated upon under local anesthesia for right inguinal hernia. In July 1922 she was subjected to a laparotomy for a condition believed to be tuberculous peritonitis but the pathological diagnosis was pseudomyxoma of the peritoneum. In October 1922 a second laparotomy was performed for the evacuation of fluid from the abdomen and a pathological diagnosis of subacute productive peritonitis was made. In October 1923 February 1924 and October 1924 X ray treatment to the abdomen was given. Menstruation stopped after the beginning of this treatment.

In January 1925 the abdomen was opened for the third time because of pain and reaccumulation of fluid and a pathological diagnosis of adenocarcinoma of the peritoneum was made. In May 1925 X ray therapy was again administered and in June 1925 fluid was again evacuated from the peritoneal cavity by laparotomy. In November 1926 a fifth laparotomy for the evacuation of fluid was done and a pathological diagnosis of mesothelial carcinoma or endothelioma arising in the peritoneum was made. Between November 1926 and June 1927 when a sixth laparotomy for the evacuation of fluid was done four more X ray treatments were given. Since January 1924 ovarian extract has been given to

alleviate the symptoms of the artificial menopause resulting from the irradiation.

CARL R. STEINKE, M.D.

## GASTRO INTESTINAL TRACT

M Cracken I E. Consecutive Tests by the Fractional Method of Gastric Analysis. *Edinburgh M J* 1928 XXXV 674

The author reviews seventy five cases in which a gastric analysis by the fractional method was done on two or more occasions. Each test was preceded by a thirty six hour period of preparation during which all drugs were stopped and a simple light diet was given. Seven hours before the test which was always made at about 7 o'clock in the morning the patient was given a cup of milk containing two tea spoonfuls of charcoal and a charcoal biscuit. A Ryles tube was used. The test meal consisted of strained gruel made in the same way for all cases. In most cases a silet was used in passing the tube. After the tube had been passed the stomach was pumped dry, the test meal was given and samples were withdrawn every fifteen minutes for two hours. The stomach was then again pumped empty. The samples were immediately examined for mucus, bile, blood and charcoal. Iodine was used to test for starch. Toeper's reagent and phenolphthalein were employed as indicators in checking the acidity and in cases in which there was a question as to the amount of free hydrochloric acid the Guenzberg test was carried out.

Sixty two per cent of the patients were able to swallow the tube without difficulty the first time they were tested and an additional 15 per cent were able to swallow it without difficulty the second time they were tested. When the acid curves were classified it was found that 47 per cent of the patients had a different curve when they were tested the second time. The difference averaged 21.6 units in the determinations of free hydrochloric acid and 9.7 units in those of total acidity. The average difference between the first and the second curves was less when the comparison was made at the end of the first hour and a half after the ingestion of the test meal. Most of the patients showed a higher response to the first test than to the second. All but one showed a higher response to the first test at the end of fifteen minutes but an hour after the ingestion of the meal the average response was greater in the second test. The percentage of cases in which a higher response was obtained in the first test seemed to increase with the ease with which the patients were able to swallow the tube. When difficulty was experienced in the swallowing of the tube it was found that the first test gave a lower curve than the second at which the difficulty was less. The rate of emptying estimated by the absence of starch was found to be constant in the two tests in about 65 per cent of the cases. In the other 35 per cent there was a variation which in the author's opinion might have been found of significance if it had been studied further. Considerable

variation was noted in the presence and the amount of bile mucus blood charcoal resting juice in the stomach and the residue at the end of the test. The author believes that this was probably of some significance.

M Cracken concludes that the variations in the results of consecutive tests by the fractional method of gastric analysis are greater than is usually supposed and that the test is not a reliable method of recording changes in gastric function resulting from treatment or other causes. However he believes that the average amount of variation is not enough to affect seriously the diagnostic significance of the results obtained from the test.

LOCIS P GAMREE M D

Naumann H. Fatal Hæmorrhage from a Gastric Ulcer Which Could Scarcely Be Seen at Autopsy (*Verblutungstod aus einem selbst bei der Autopsie kaum nachweisbaren Ulcus ventriculi*). *Ved. Aftn* 1928 xiv 935.

After a few prodromal symptoms a twenty two year old girl had a gastric hæmorrhage with subsequent intestinal bleeding. Another copious hæmorrhage eleven days later was fatal.

At autopsy it was impossible to discover the slightest evidence of ulcer on the external surface of the stomach but the gastric mucosa on the posterior wall showed a very shallow ulcer about the size of a lentil. The fatal hæmorrhage was probably due to a very small blood vessel in the center of the ulcer.

LTJAZ (Z)

Mandler V. Gastric Ulcer and the Bayliss Starling Law (*Magengechwür und Bayliss Starlingsches Grundgesetz*). *Acta chirurg Scand* 1928 lxxv 346.

The author is of the opinion that the pathogenesis of the functional symptoms of ulcer of the lesser curvature may be explained by the Bayliss Starling law. He discusses the most important symptoms from this standpoint.

White F W and Jankelson I R. Late Intussusception of the Bowel into the Stomach After Gastro Enterostomy. *New England J Med.* 1928 cxix 1189.

The authors review the literature on late intussusception of the bowel into the stomach after gastro-enterostomy and report two cases.

The first case was that of a man thirty-eight years of age who was operated upon for a penetrating ulcer of the duodenum. The ulcer was inverted and a gastro-enterostomy was performed. Eighteen months later the patient was suddenly seized with epigastric pain and hæmatemesis resulting in moderate shock. Operation was not considered urgent but death occurred after a few hours.

At autopsy the stomach was found greatly dilated and filled with blood stained fluid and coils of small intestine. A 40-cm portion of bowel had become invaginated through the gastro-enterostomy opening and was congested and somewhat gangre-

nous. This loop of bowel had been the source of the bleeding.

The second case was that of a man thirty-seven years of age upon whom a posterior gastro-enterostomy was performed for pyloric ulcer with obstruction. Four years later vomiting of coffee-ground vomitus occurred for four days the bowels failed to move and peristalsis became visible above the umbilicus. Operation revealed a loop of small intestine invaginated into the stomach through the gastro-enterostomy opening. Death resulted.

The authors review sixteen similar cases reported in the literature. Hæmatemesis was a frequent and important symptom. A tumor mass was found in less than 50 per cent and the mortality after operation was 50 per cent. WILLIAM A BRAUN M D

Wolfsohn G. Gastric Carcinoma After Gastro-Enterostomy for Ulcer (*Ueber Magencarcinome nach Gastro enterostomie wegen Ulcus*). *Dtschke med Wchnschr* 1928 lv 1070.

On the basis of 150 of his own cases and 15 hospital cases of gastric ulcer which were treated by gastro-enterostomy the replies to a questionnaire sent to Berlin surgeons and gastro-enterologists and the statistics in the literature the author has come to the conclusion that cancer of the stomach is very rare after gastro-enterostomy unless it was present before the operation and that when symptoms recur several years after the operation they are probably not due to the development of a gastric cancer.

He believes that the mucosa of the small intestine contains anti-carcinoma substances since carcinoma of the small intestine is very rare as compared with carcinoma of other parts of the intestinal tract and other tumors of the small intestine. Ulcer of the duodenum very seldom undergoes malignant degeneration as compared with ulcer of the stomach and gastric ulcers for which gastro-enterostomy is done practically never become carcinomatous where as of those not treated surgically from 10 to 70 per cent become malignant. JOSEPH (Z)

Moynihan Sir B. Problems in Gastric Surgery. *Brit M J* 1928 ix 1022.

This article is based on the author's experience of thirty years. Moynihan deprecates the use of the term gastroduodenal ulcer in a recent article by MacLean Jones and Fildes as he believes that no advance in our knowledge of these two conditions can occur if they are spoken of as one disease. He calls attention to the fact that gastric and duodenal ulcers differ in symptoms in their behavior as regards hæmorrhage and perforation in their tendency to undergo malignant degeneration and in the chemical nature of the contents of the stomach. Moreover the two lesions occur as a rule in opposite types of persons. He believes the use of the term juxtapyloric ulcer is also to be condemned. In his series of over 2,000 cases of gastric ulcer less than 3 per cent of the lesions were at the pylorus or within 1½ in of it.

Acute gastric and duodenal ulcers are usually multiple and heal quickly leaving little or no trace. They very rarely perforate and seldom bleed. This was demonstrated by observations of gastric ulcers over a twelve year period. In 60 of 61 cases in which death occurred from perforation and in 13 of 14 cases in which death resulted from hemorrhage the ulcer was chronic. The same relationship was noted in a similar series of cases of duodenal ulcer.

With regard to the relative value of medical and surgical treatment Moynihan states that both gastric and duodenal ulcers may heal under medical treatment and remain healed but since sound healing may result in pyloric stenosis which is virtually duodenal stenosis and in hour glass contraction of the stomach surgical treatment may be necessary eventually in cases at first treated medically. At autopsy evidence of open or healed ulcers is found in 5 per cent of bodies examined and in many of the cases there has been no history of symptoms.

Before medical treatment is begun the presence of an ulcer must be established definitely. At times the X ray findings are misleading. MacLean has reported the complete healing of a very large penetrating gastric ulcer in three weeks under medical treatment but the author has never known of such an ulcer to heal in less than four months. In the author's cases the ulcer was seen at operation and was found too high for resection an operation such as cholecystogastrostomy was done and the healing was carefully watched by X ray examination.

Moynihan emphasizes that the surgeon may do irreparable injury by performing a short circuiting operation in cases in which no trace of ulcer is found whereas drugs and dietary treatment do no harm if an ulcer is not present. In cases without ulcer medical treatment has earned an undeservedly high repute and surgical measures have been brought into unwarranted disrepute.

Medical treatment is apt to be dangerous prolonged and tedious. To banish symptoms is easy but cessation of the symptoms seldom means that the ulcer is cured. The object of treatment must always be firm healing of the ulcer. MacLean is quoted as stating that if symptoms recur treatment with milk and alkaline powders for a day or two is indicated but Moynihan emphasizes that recurrence of symptoms means renewed activity of the ulcer infection and spasm. MacLean uses the word cure in reporting a number of cases in which treatment was begun in 1926 or 1927 but in Moynihan's opinion a cure under medical treatment in the short period since that time cannot be assumed especially when seasonal variations and the cyclical character of the symptoms are taken into consideration.

With regard to the intensive administration of alkalies Moynihan points out that this treatment is theoretically unsound since in many cases of ulcer the gastric contents show a low acidity or none at all. However until something better is found alkalies are indicated when hyperchlorhydria is

present. It has been suggested by Kinsella that the potent effect of alkalies is due not so much to their neutralizing power as to their ability to dilate the pylorus with subsequent relief of the spasm and emptying of the stomach.

If medical treatment is to succeed the patient must closely follow the advice of his physician. Perfunctory and haphazard procedures which leave too much to the patient are often the cause of disappointment in the results and of the recurrences or true disasters with which the surgeon has so frequently to deal. Medical treatment must include a few weeks of rest and the administration of triple or quadruple carbonates when the acid content is high. Advice with regard to diet the use of alcohol and drugs and rest warmth and clothing must be scrupulously followed by the patient. Moynihan takes exception to Hurst's statement that calloused and penetrating ulcers may heal in three months as he has found that healing may require as long as three years.

The patient who has experienced many recurrences or in whom one or more chronic ulcers have existed or are still present is only wasting time and risking his life by continuing medical treatment. It is rare indeed to hear of a patient who has unflinchingly submitted to the full prolonged medical treatment. Moreover patients in poor financial circumstances are seldom able to give medical treatment an adequate trial. Therefore the treatment of gastric and duodenal ulcers is an economic rather than a medical problem. Deaths in cases treated medically must be attributed to the failure of that treatment.

If gastro-enterostomy owes its success to the alkalinizing power of the bile that enters the stomach it would seem rational to expect that cholecystogastrostomy would accomplish the same results. In cases of inaccessible large ulcer in the stomach with a normal or high acidity and in cases of jejunal ulcer the latter operation has been done but it is still too soon to judge the end results.

A certain percentage of gastric and duodenal ulcers can be influenced only by surgery the proportion depending upon the ages and general condition of the patients the duration of the ulcers the care exercised in intensive medical treatment and its duration the subsequent attention paid to diet and other matters the occurrence or non-occurrence of hemorrhage stenosis and chronic perforation with adhesions to neighboring parts and in the case of the stomach the tendency toward malignancy.

Seldom if ever does a patient with duodenal ulcer and a history of two or more attacks recover permanently under medical treatment. The symptoms may subside for months or even years but ultimately they recur. As a rule it is the incompletely calloused ulcer that breaks down. Hundreds of such cases have been seen.

The main indications for surgical treatment in duodenal ulcer are recurrence of the symptoms stenosis and bleeding.



Attention is called to the modern tendency of surgeons everywhere to abandon short-circuiting operations. The author's long experience leads him to believe that such operative procedures are the most successful of all abdominal operations. The grave discrepancies in opinion are explained by the fact that gastro-enterostomy should never be performed alone but should be accompanied by some measure that deals directly with the ulcer. Unless this advice is followed the symptoms may recur and perforation or bleeding may necessitate reoperation. In addition the appendix should be removed and the gall bladder and spleen dealt with as indicated. In cases with an ulcer on the posterior surface and with or without an anterior ulcer the duodenum may be opened the ulcer cauterized and the pylorus closed temporarily with an encircling suture. In over 80 per cent of cases with both an anterior and a posterior ulcer the anterior ulcer is the older. Lake's dissatisfaction with gastro-enterostomy is attributed by Moynihan to inadequacy of his attack. Careful pre-operative preparation is essential. Since the area *tomosa* does not heal by first intention bismuth carbonate should be given and a special diet prescribed. There will be no dissatisfaction with gastro-enterostomy if care is taken to observe these rules. The mortality averages 1 per cent although Pannett in a recent article reported it to be 4 or 5 per cent in selected cases and higher in unselected cases. Preliminary preparation of the patient including blood transfusion does not mean that the case belongs in the selected group.

It is difficult to explain the wide differences of opinion as to the ultimate results of gastro-enterostomy. Commonly an unsatisfactory result means that the operation was not properly performed. Lake gives the incidence of unsatisfactory results as 36 per cent but in the author's experience it is between 6 and 8 per cent. The operation is too often done for such conditions as lead poisoning, viscerospasm, cholelithiasis, tabes dorsalis and achlorhydria.

When definitely indicated and properly performed gastro-enterostomy should cause no anxiety except in the case of hemorrhage and jejunal ulcer. The former occurs as a rule from an ulcer at or near the anastomosis. Failure entirely to eradicate dental infection may be responsible for bleeding. Splenic anemia and acute ulcer may also initiate hemorrhage. Moynihan takes exception to a statement by Pannett that gastric ulcers and especially duodenal ulcers are as liable to bleed after operation as before. He states that if this is the case it must be assumed that gastro-enterostomy was done in cases of gastric ulcer for which it was unsuitable or that a duodenal ulcer was left untouched.

The ultimate results of gastro-enterostomy are spoiled by the complication of jejunal ulcer in from 4 to 5 per cent of cases. The ulcer may develop while the patient is still in the hospital or as late as nineteen years later. As a rule it appears within two years.

Lewisohn reports that jejunal ulcer developed in 34 per cent of cases in which he performed a gastro-enterostomy for duodenal ulcer while Burges reports that he has rarely observed the lesion. Following the lead of Haberer many surgeons now advocate partial gastrectomy for duodenal ulcer. Before this procedure is considered gastro-enterostomy should be given a fair trial based on strict adherence to an invariable routine including careful examination pre-operative preparation confirmation of the clinical diagnosis at operation destruction of the ulcer by cauterization or otherwise repair of the duodenum followed by a short-circuiting operation removal of the appendix examination of the biliary tract regulation of the diet and restriction of the use of tobacco alcohol, and salt. If these precautions were fully observed little would be heard of deaths or poor results after gastro-enterostomy.

There is no doubt that gastrectomy for duodenal ulcer is a more serious operation than gastro-enterostomy. Its mortality ranges from 5 to 10 per cent and in cases operated upon by surgeons of little skill is much higher. The unsatisfactory deduction is therefore that if every patient with an unsatisfactory result after gastro-enterostomy were to die from the operation the survivors with a good result would be equal in number to the survivors after gastrectomy that is to say equal in number to those who in the author's practice died after gastro-enterostomy plus all those whose results ultimately prove unfavorable. The advocates of gastrectomy claim that because of the anacidity resulting from the operation secondary ulcers are unlikely to develop. This statement has been disproved repeatedly. Even when three fourths of the stomach has been removed free hydrochloric acid may be found. The literature reports at least 100 cases of jejunal ulcer following gastrectomy for duodenal ulcer. On the other hand jejunal ulcer rarely follows gastrectomy performed for gastric ulcer.

In 166 cases of duodenal ulcer operated upon by Haberer in the period from 1925 to 1927 the mortality was 8.4 per cent. Of the 107 patients traced 2 developed a gastrojejunal ulcer.

The advocates of gastrectomy are asked by Moynihan upon what grounds the operation is established. As the mortality is between 5 and 10 per cent the operation seems prohibited for it means that a larger number of patients are caused to die in order that a larger number may live to experience a possibly slighter chance of developing a new ulcer. The chemical results do not show to advantage when compared with those following gastro-enterostomy and there is not a great degree of freedom from the only serious sequela gastrojejunal ulcer. In surgery the search should always be for safety and simplicity. Gastrectomy for duodenal ulcer is neither safe nor simple and does not give better end results than gastro-enterostomy. The worst of gastro-enterostomy is known and the best is unsurpassable. We have yet to learn the

worst of gastrectomy and what we know is unfavorable enough

A Continental surgeon has spoken of gastro-enterostomy as a disease. It is true that it is a disquieting and formidable disease—serious wide spread and highly contagious—but its victims are to be found among surgeons rather than among patients. It is the irrelevant application of the operation to unsuitable cases and its imperfect performance in cases requiring it that have brought it into disrepute.

It is true that we are hearing of more and more gastro-enterostomies that require separation. The author has separated many of them but in none of the cases has he seen any unequivocal sign of an old or recent gastric or duodenal ulcer. If the operation had been necessary the anastomosis would not have required separation except of course in cases of jejunal ulcer. The necessity to undo an anastomosis is a reflection not upon an accredited operation but upon the judgment of the physician who advised it or the surgeon who performed it in that particular case. Too often the operation is done solely upon the advice or request of the referring physician.

MORRIS A. SLOCUM, M.D.

Flint E. R. Complete Gastrectomy for Carcinoma of the Stomach. *Brit. M. J.* 1928 ii 979

The patient whose case is reported was a laborer forty four years of age whose chief complaints were indigestion with pain, anorexia and loss of weight. The indigestion had been present for two and a half years. Epigastric pain occurred about half an hour after the ingestion of food. At first the attacks lasted three or four weeks and were followed by almost complete freedom from symptoms. There had never been any vomiting of food or blood and no blood had ever been noted in the stools. The patient suffered from constipation.

Physical examination showed the patient to be anemic and revealed an ill defined lump in the epigastrium.

A diagnosis of carcinoma of the stomach was made.

At operation the stomach was found to be the size of a large growth. There were thin adhesions to the pancreas. Several glands along the lesser curvature and one gland at the esophageal juncture were involved. A pylorotomy was performed and the duodenal stump inverted. The gastroduodenal omentum was divided along the greater curvature and the lesser gastrophrenic omentum similarly treated. The stomach was then mobilized and drawn down by traction on the esophagus cut off and sutured to the jejunum. The jejunum was drawn up in front of the transverse colon.

The patient bore the operation well. Within a month he was out of bed and able to take small quantities of soft food at frequent intervals. After a meal he very soon became hungry again. Diarrhoea was present for several months after the operation but finally ceased entirely. Microscopic sections

showed the tumor to be a spheroidal celled type of growth.

Seventeen months after the operation the patient was back at work, able to eat normally and in apparently good health except for slight anemia. Eighteen months after the operation the erythrocyte count averaged 4,500,000, the haemoglobin value was 76 per cent and there was only a slight variation in the size, shape and staining qualities of the cells.

JOHN W. NICHOL, M.D.

Sherry L. B. Two Cases of Benign Intestinal Obstruction. *Surg. Clin. N. Am.* 1928 viii 1571

The first case reported was that of a man twenty six years of age who suffered an acute attack of abdominal pain. When the patient was seen by Sherry the abdomen was tense but not distended, the temperature 101 degrees F and the leucocyte count 14,000. A diagnosis of perforated appendicitis with peritonitis was made.

Operation through a right rectus incision revealed a Meckel diverticulum which had tied itself into a single knot around a loop of the ileum in such a way that the distal free end had become gangrenous. When the adherent band was freed the bowel assumed its normal color. The abdomen was closed without drainage. Recovery was uneventful.

The second case was that of a man sixty years of age with a history of pain in the lower part of the abdomen, nausea and vomiting of four days duration. Examination of the upper abdomen revealed a visible tumor mass in the midline above the umbilicus. The mass was the size of an orange and freely movable from side to side. It was not painful. A diagnosis of probable malignancy of the transverse colon was made.

Operation revealed an intussusception of the ascending colon into the transverse colon. This was readily reduced. A retention cyst or mucocele of the appendix measuring 9 by 3.5 cm. was then found and removed. The patient made an uneventful recovery. The specimen was filled with a clear mucoidal material and on microscopic examination was found not to be malignant. JOHN W. NICHOL, M.D.

Retan G. M. Non Operative Treatment of Intussusception. *N. York State J. M.* 1928 xxviii 1408

In Retan's method of treating intussusception non surgically the child is placed on a horizontal fluoroscopic table and barium in water is injected into the rectum by gravity under a pressure of 3 or 4 ft. The barium will stop at a level below the intussusception. When this occurs the supply of barium is turned off. There is then a column of barium in the colon and above it a column of gas. Above the gas is the obstruction.

With the inner side of one hand placed transversely across the abdomen pressure is applied on the sigmoid to prevent the barium from escaping and then with the other hand pressure is carefully and intermittently made on the colon to force the

barium upward. The advancing barium forces the gas upward distending the colon and exerting an even pressure against the obstruction.

The result of this procedure is watched in the fluoroscope. If the obstruction is not relieved the column of barium is seen returning when the pressure is removed. If the obstruction is relieved the colon is filled with the barium. Its outline is then carefully studied. If the colon cannot be completely outlined operation is done.

In 400 cases treated by this method by Koch and Oerm the mortality was lower than in cases treated surgically. HARRY W. FINK, M.D.

Moir P. J. and Walker C. F. Sarcoma of the Small Intestine. *Brit. M. J.* 1928 II 110.

Sarcoma usually occurs about midway along the small intestine. The prognosis and symptoms do not vary according to the microscopic picture of the growth but depend upon the gross morbid anatomy. The following three types are recognized.

1. A small polypoid mass projecting into the lumen of the gut. This is the most common type. After several months of general symptoms chiefly cachexia, colic and fever acute intussusception occurs.

2. A cuff like or tubular infiltration of the bowel wall. After general symptoms of several weeks or months duration an abdominal tumor suggesting an appendiceal abscess or ovarian cyst is discovered or subacute obstruction simulating a growth of the colon takes place.

3. A pedunculated mass from the peritoneal surface of the gut. General symptoms are followed by acute symptoms due to the increasing bulk of the tumor changes within it or acute torsion of the involved coil of small bowel.

Three cases are reported. In the first in which operation was performed for acute intestinal obstruction a large tumor (sarcoma with eosinophilic mitration) was found 18 in. below the duodenojejunal juncture. This was resected and a lateral anastomosis was performed. Eleven years later an annular cuff like growth high up in the small intestine was removed following several months of colic and vomiting. The patient was well one year after the second operation.

In the second case there was a spindle cell sarcoma in the form of a sloughing cyst attached to the small intestine 1 ft. from the duodenojejunal juncture. The patient was alive one year after resection and lateral anastomosis.

The third case was that of a patient who was admitted to the hospital in very poor condition with a diagnosis of acute intestinal obstruction. Operation revealed a small intestinal tumor but ileostomy was all that could be done. At autopsy a rhomboid fleshy mass was found adherent to the small intestine 8 ft. from the ileocecal valve. This had caused intestinal obstruction by bringing about torsion of the coil to which it was attached.

HARRY L. SALTSTEIN, M.D.

Green N. W. Polypoid Adenocarcinoma of the Jejunum with Acute Intussusception. *Ann. Surg.* 1928 LXXVIII 1112.

Green N. W. Leiomyoma of the Jejunum with Intussusception. *Ann. Surg.* 1918 LXXVIII 1113.

A woman thirty four years of age gave a history of abdominal cramps for twenty five days and nausea and vomiting for two days. For two years she had been on a diet because of a nervous stomach. At operation an intussusception was found about 4 ft. from the ligament of Treitz. A 5 in. portion of the gut with a pedunculated mass was resected and a side to side anastomosis was done. Good recovery resulted. The pathological diagnosis was polypoid adenocarcinoma of the jejunum.

A man sixty seven years of age had suffered for six months from attacks of abdominal pain which lasted for several hours. At operation 5 in. of the jejunum and a tumor about 18 in. from the ligament of Treitz were resected and a side to side anastomosis was done. Good recovery resulted. The pathological diagnosis was leiomyoma of the jejunum.

CARL R. STENKE, M.D.

Caldhick S. L. Two Cases of Persistent Omphalo-mesenteric Duct. *Surg. Clin. N. Am.* 1921 VII 1341.

In one of the author's cases of persistent omphalo-mesenteric duct that of a baby eighteen days old there was a discharge of fecal material though the umbilicus which interfered with nutrition to such an extent that surgical intervention was necessary. In the other case that of a woman thirty two years of age the remnant of omphalo-mesenteric duct bound the ileum to the umbilicus and was the cause of abdominal distress but there was no discharge.

LOUIS P. GAUDET, M.D.

Ryle J. A. Chronic Spasmodic Affections of the Colon and the Diseases Which They Simulate. *Lancet* 1928 CCXV 1115.

Ryle reviews a series of fifty cases of spastic colon—thirty nine without excess mucus in the stools and eleven of the condition commonly called "mucous colitis." Thirty three of the patients were females. The average age was thirty nine years. The patients are described as lean thin and pale and twenty seven of them as nervous anxious or neurotic. A history of dysentery excessive use of tobacco constipation and excessive purgation was often elicited. In eighteen cases (36 per cent) the appendix had been removed without relief of the symptoms.

The chief complaint in chronic spasmodic conditions of the colon is usually discomfort or pain in the lower part of the abdomen. The pain is often a dull continuous ache. It varies greatly in its severity. In rare cases morphine is necessary. As a rule, the affected parts of the colon can be easily palpated. Examination of the stools reveals no blood. On sigmoidoscopic examination the mucosa appears normal. After a barium enema the X-ray may show

in extreme cases the affected length of bowel as a thin thread or streak of barium. There may be also a shortening or straightening of the affected segment. The condition must be differentiated from appendicitis duodenal ulcer diverticulitis carcinoma of the colon renal colic intestinal obstruction ovarian and tubal disease and neurasthenia.

The treatment must include a simple explanation of the nature of the disorder to the patient. General hygienic measures are important. Mental and physical relaxation moderate exercise warmth and a sensible mixed diet are necessary. The bulky starchy foods which cause flatulence must be avoided. Most fruits are desirable. Purgatives should be forbidden. The use of tobacco should be restricted. Belladonna helps to relax the spasm. Bromides should be reserved for nervous patients. When the pain is severe large warm enemata administered slowly and rectal injections of 4 or 5 oz of warm liquid paraffin to be retained overnight are beneficial. As the disorder is so largely dependent upon constitutional factors it is difficult to correct but rational treatment will often relieve the symptoms and in mild cases may effect a cure.

JOHN W. NUTZ, M.D.

Thorlakson P. H. T. Ulcerative Colitis. *Canadian J. 1st J. 1925 xix 656*

Ulcerative colitis is an essentially chronic inflammation of the colon which is subject to acute or subacute exacerbations. The exact cause is unknown but the condition is almost universally believed to be of infectious origin. The pathological lesion is typical and constant. It is an erosion which in the advanced stages is associated with edema congestion and leucocytic infiltration of the entire bowel wall. While the whole length of the large bowel is frequently involved the disease affects most commonly the rectum and sigmoid.

The clinical manifestations are diarrhoea with from six to thirty stools a day containing blood pus and mucus a varying degree of secondary anaemia loss of weight in spite of a fairly good appetite slight fever a leucocytosis and cramp like abdominal pain relieved by evacuations. In the diagnosis the sigmoidoscope is indispensable. The X-ray is of aid in excluding other causes of diarrhoea and revealing the extent of the disease.

The complications of ulcerative colitis are arthritis haemorrhage perianal abscess stricture polyposis perforation and malignancy.

As the nature of the micro-organism responsible for the condition is not known the treatment has not been standardized. The author has found a simple caecostomy for irrigation of great value. Transverse ileostomy is rarely necessary but is of benefit in selected cases. Its indications are repeated profuse colonic haemorrhages generalized polyposis and long standing cases in which the colon has been converted into a useless fibrous tube.

Dietetic and medical management are of great importance. A low residue diet of high caloric value

is indicated. Cod liver oil and calcium lactate by mouth may be added. Stovarsol occasionally causes marked improvement.

The author believes that ulcerative colitis is due to infection by the bacillus dysenteriae and should be regarded as a form of bacillary dysentery. He therefore uses an autogenous serum obtained by injecting into animals the Flexner bacillus isolated from recent cases and believes that this treatment is likely to prove better than other methods.

SAMUEL KAN, M.D.

Adam L. Primary Carcinoma of Bauhin's Valve. (*Ueber das primäre Carcinom der Valvula Bauhini*). *Otoskop 15 1928 xviii 29*

Carcinomatous growths of Bauhin's valve are quite rare and are difficult to recognize because the clinical manifestations begin with signs of intestinal obstruction. The author reports the case of a patient fifty two years old who entered the clinic with a history of symptoms characteristic of gall stone colic or duodenal ulcer of six months duration and with signs of intestinal obstruction for five days. A diagnosis of gall stone ileus was made but at operation the cause of the obstruction was found to be an annular neoplasm in the caecum. As the patient's condition did not allow a radical procedure the author divided the ileum 15 cm. above the ileocecal valve inverted the distal end and brought the proximal end through the abdominal wound after introducing a drainage tube.

The patient recovered so rapidly that two weeks later the lower part of the ileum the caecum and the ascending colon were radically extirpated. The transverse colon was then closed blindly the loop of small intestine leading to the abdominal wall was divided and its proximal end was anastomosed end to side to the transverse colon and the distal end and the ileostomy were removed. Uninterrupted convalescence resulted.

The opened specimen showed clearly how the ileocecal valve had been forced into the lumen of the caecum by the increased peristalsis of the small intestine with the production of complete obstruction. Microscopic examination showed the tumor to be an adenocarcinoma.

MAKAI (2)

Fried H. Roentgenological Study of the Inverted Caecum. *Am J Roentgen 1 1928 xx 531*

The caecum becomes inverted as the result of congenital malposition associated with interference with its normal descent or prolongation of the mesocolon and abnormal mobility of the ascending colon and caecum. Three cases of cecal inversion are reported by the author. From a study of these and similar cases Fried draws the following conclusions:

- 1 The inverted caecum is a clinical entity.
- 2 It has both a clinical and a roentgenological syndrome.
- 3 The clinical signs and symptoms are fairly constant.

4 The diagnosis can be established only by roentgenological study

5 When the caecum is in the normal position or is high the diagnosis may be established by the ingested barium meal

6 A high caecum will turn back to its normal position when it is distended with a barium enema unless it is held by adhesions

7 In a low caecum an ingested barium meal will fail to show inversion because of the crowding and massing of the intestines but the barium enema will reveal the inversion because the floor of the pelvis prevents the organ from turning downward and the intraluminal pressure forces it to turn upward

8 The standing position will frequently turn the inverted caecum down and the prone position will turn it up

9 Recognition of the inverted caecum is of prime clinical importance as it may prevent an unnecessary abdominal operation ADOLPH HARTUNG M D

Mönnier E The Diagnosis of Appendicitis in Childhood (Zur Diagnose der Appendicitis im Kindesalter) *Schweiz med Wchnschr* 1923 IVIII 697

The author reviews 1 056 cases of appendicitis in children which were operated upon with a mortality of 5.2 per cent In the cases in which the operation was performed on the first day of the illness there were no deaths All fatalities were due to peritonitis or peritoneal sepsis In one half of the fatal cases the physician was called too late In one third though called in time he failed to recognize the nature of the condition The cause of the error in diagnosis was usually a retrocecal position of the appendix or displacement of the appendix in the small pelvis

On the basis of these cases the author discusses the differentiation of the condition from acute gastro-enteritis acute colitis colonic spasm catarrhal jaundice pneumoniae occie and gonococcal peritonitis parasitic ileus perforation of Meckel's diverticulum twisted ovarian cyst intussusception tuberculosis of the mesenteric glands acetonemic vomiting pneumoniae the early stage of measles scarlet fever chicken pox tonsillitis pharyngitis pyelocystitis meningitis pelvic osteomyelitis and actinomycosis He states that when there is doubt as to the diagnosis operation should be performed Operation should be performed early

STARLINGER (Z)

Bettman H W Chronic Appendicitis from the Viewpoint of an Internist *Ann Int Med* 1923 II 309

Chronic appendicitis must not be confused with recurrent appendicitis The latter is an attack of acute or subacute appendicitis The more nearly the clinical picture suggests an acute attack the more certain the curative effect of an operation When there is no history of a preceding attack of acute appendicitis and when the main clinical symptom is

distress in the right lower quadrant of the abdomen operation is almost sure to fail to give relief If judged not by the pathologist's report but by the clinical results the results of operation for chronic appendicitis are disappointing in 40 per cent of the cases

The belief that epigastric distress associated with iliac tenderness on the right side means appendicitis is to be deplored Operations for so-called chronic appendicitis are not harmless Even when they are performed by skilled surgeons there is a certain unavoidable operative mortality and serious after effects cannot always be prevented One sequel of appendectomy which is far from uncommon—ileac stasis—has received little recognition or study This is a distinct clinical entity It has a fairly characteristic clinical history and can be recognized by X ray examination

Of more than 3 000 appendices studied by the author more than 1 300 showed chronic changes of productive inflammation beginning with infiltration of the submucosa with round cells and ending in fibrosis The first changes occur near the tip of the appendix and consist in infiltration of round cells about the Meissner ganglia This process increases until the ganglia may be completely buried in round cells The cells gradually decrease as the fibrosis proceeds until the ganglia are embedded in dense scar tissue Corresponding changes are sometimes found in the ganglia in the neck of the gall bladder

Rohdenberg believes that so-called chronic appendicitis is due to a lesion of the sympathetic nervous system which is not restricted to the appendix alone but is probably general to the splanchnic system Such a lesion would explain the reflex gastric symptoms the attacks of spasm and pain and why removal of the appendix or gall bladder or of both does not always relieve the symptoms

SCHULZ HAN M D

Hornung R A Contribution to the Relation Between the Appendix and the Genitalia (a) Carcinoma (b) Pseudomyxoma (Beitrag zu Beziehungen zwischen Appendix und Genitale (c) Carcinom (b) Pseudomyxom) *Zentralbl f Gynäk* 1923 LV 1630

The author reports a case of primary carcinoma of the appendix with metastases to both ovaries The diagnosis was confirmed by microscopic examination Lubarsch and others have described so-called carcinoids small nodules at the tip of the appendix These occur most frequently at an early age and show a tendency toward infiltrative growth but do not tend to form metastases or to recur Nevertheless they are true epithelial neoplasms and not inflammatory adenoid proliferations

In the author's case of primary carcinoma of the appendix the malignancy of the tumor was evident from the clinical course The forty-one year-old patient died of metastases after five months

In the case of a woman fifty-nine years of age with pseudomyxoma of the peritoneum involving

the ovaries and appendix the primary site of the condition could not be determined. There are reports of cases of myxomatous degeneration in both males and females in which the appendix was undoubtedly the primary focus. Independent involvement of both organs simultaneously is highly improbable. However in the author's case the primary focus could not be determined since by the rupture of the appendix particles of mucosa could have been transplanted to the ovary and epithelial proliferation from the ovary could have been conveyed to the appendix by way of inflammatory membranes between the appendix and the ovary. In such cases the spread is due to implantation of the cells whereas the metastasis of carcinoma of the appendix to the ovaries probably occurs by retrograde transportation of the carcinoma cells through the lymphatics.

STEEGART (G)

Lundh G. On the Treatment of Prolapsus Recti  
*Acta chirurg Scand* 1928 lxxv 38

The author has re-examined eighty-four women who were treated for rectal prolapse at the Malmö General Hospital during the period from 1906 to 1926.

In fourteen cases the treatment was conservative consisting of restriction of the diet, rest in bed and lavage of the rectum. In sixty-nine cases a simple thermocauterization was done after conservative methods had failed. In one case the rectum was fixed to the uterus in connection with an operation for uterine prolapse.

Of the fourteen women treated conservatively two were found on re-examination to have a recurrence. One of the latter was subsequently treated by thermocauterization but the other refused further treatment.

Of the sixty-one women treated by thermocauterization who were traced all were free from their previous symptoms and two were found to have a very slight degree of prolapse.

Dukes C. Urinary Infections After Excision of the Rectum. Their Cause and Prevention. *Proc Roy Soc Med Lond* 1928 xxi 259

In a series of fifty cases of excision of the rectum—fourteen those of women and thirty-six those of men—the author studied the frequency cause and prevention of urinary infection by daily quantitative tests for pyuria and repeated bacteriological examinations of the urine. Pyuria appeared from six to eight days after the operation in the cases of all of the women and in the cases of fourteen men in whom the retained catheter was sealed by a wooden peg. In some cases the pus disappeared in four or five weeks but in the majority it was present for a longer period. For two or three days before the flow of pus began staphylococci were obtained in pure culture from the urine. Later cultures usually showed a mixed growth of coliform bacilli and cocci. The lesion in the female patients and in most of the male patients was cystitis. In a few of the male patients the pus may have been due to urethritis.

During convalescence from excision of the rectum urinary infections rarely produce obstructive symptoms and the presence or absence of an infection can be determined only by regular microscopic examinations for pus.

Urinary infections following excision of the rectum are due not to the operation itself but to the means used for drainage of the bladder. In the cases of male patients which are reviewed by the author the most common source of such infection was the wooden peg used to close the retained catheter. The substitution of a better seal resulted in the prevention of infection of the bladder urine in two-thirds of the cases in which it was done and in those in which it failed the infection ran a different course. In females the prevention of infection is more difficult because of the danger of contact between the catheter and local sepsis.

The prevention of urinary infection after excision of the rectum is a task requiring the close cooperation of the surgeon and pathologist. Regular microscopic examinations of the urine for pus are necessary. The minimal number of weekly tests required to determine whether infection has occurred and to determine it early is six.

The author recommends that patients who are to be subjected to excision of the rectum be given two doses of vaccine prepared from the bacteria which cause postoperative urinary infections: the first dose to be administered as soon as possible after the diagnosis has been made and the second after an interval of from seven to ten days. SAMUEL KAHN, M.D.

Dieterich H. Experiences at the Giesen Clinic in the Radical Treatment of Rectal Carcinoma (Die Radikale Behandlung des Mastdarmkrebses nach den Erfahrungen der Giessener Klinik). *Arch f klin Chir* 1928 cl 691

The author reviews 364 cases of carcinoma of the rectum which were treated in the period from 1906 to 1927. A radical operation was performed in 234. Amputation of the rectum was done 73 times with 14 deaths. Resection of the rectum: the operation of choice when the carcinoma is not too high, was performed 112 times with a mortality of only 8.8 per cent. Combined resection was done 46 times for a high rectal carcinoma with a mortality of 19.5 per cent.

The late results corresponded to those of other clinics. They showed no differences in the various technical procedures. Of the patients operated upon by the combined method 37.5 per cent were alive after three years, 21.8 per cent after five years and 18.8 per cent after eight years. FISCHER (7)

#### LIVER, GALL BLADDER, PANCREAS AND SPLEEN

Horral O H. Bilirubin a Non Toxic Substance  
*J Lab & Clin Med* 1928 xiv 217

Using heart lung preparations similar to those of Knowlton and Stirling and Lambert and Rosenthal

modified for use with one dog the author tested highly purified bilirubin extracted from gall stones of cattle

Heparin was injected intravenously to prevent clotting. Bilirubin dissolved in various solutions such as 1 per cent sodium carbonate 1 per cent sodium hydroxide human serum and dog serum was injected into the blood stream of nine dogs with heart lung preparations. Slight variations in the pulse rate occurred corresponding to the usual variations in the control heart lung preparations. The blood pressure however did not change in any instance although the fat about the heart and the lungs became deeply colored.

A 0.662 per cent solution of sodium glycocholate introduced intravenously for comparison caused an immediate fall in the blood pressure irregularity of the heart action and cessation of activity with acute dilatation of the entire heart. Sodium cholate 0.47 per cent caused irregularity of the heart action and a fall in the blood pressure. Whole gall bladder bile 5 c cm in 210 c cm of blood caused irregularity of the heart action with a marked increase in the amplitude of the beat. Atropine then caused slowing of the rate but adrenalin had very little effect. A second injection of bile caused a marked increase in the amplitude of the beat and an increase in the rate but this was soon followed by cessation of the heart action. What appeared at first to be the stimulating action of bile quickly paralyzed the heart.

The author concludes from these experiments that bilirubin has no effect on the heart.

STANLEY H. MENTZER M.D.

Katayama I. Bile Acids in Jaundice. *Arch Int Med* 1928 xlii 916

It has been known for many years that bile acids circulate in the body that they are rapidly absorbed from the intestinal contents and reappear in bile.

In ten normal persons the bile acids of the blood serum averaged 7 mgm per 100 c cm. There were no bile acids or urobilin in the urine as indicated by the author's colorimetric test for the former and Elman and McMaster's quantitative test for the latter.

An increase in the bile acids in the blood serum associated with the excretion of bile acids in the urine was found in eight cases of cholecystitis four cases of disease of the liver seven cases of catarrhal jaundice five cases of obstructive jaundice and three cases of cardiac decompensation.

Bile acids appear in the urine when the concentration of bile acids in the blood serum exceeds 20 mgm per 100 c cm. Acute obstructive or catarrhal jaundice produces a rapid rise in the bile acids of the blood serum from about five to seven times the normal figure. In chronic obstruction however the increase in bile acids in the blood is only to three or four times the normal. This smaller concentration of bile acids in the blood in chronic obstructions may be explained thus:

The production of bile acids in the body is limited. Normally these acids are excreted by way of the bile into the intestine and are then reabsorbed and enter the circulation. Accordingly the bile acids in the body are kept at a constant level. In obstructive jaundice of long standing there is a continuous excretion of bile acids by the kidney the store of bile acids in the body being thereby depleted.

STANLEY H. MENTZER M.D.

Wolfer J. A. and Christian L. W. Pancreatic Function Tests with Special Reference to the Quantitative Determination of Fecal Amylase. *Arch Surg* 1928 xlvii 899

Clinical diagnoses of pancreatic disease cannot be established by present tests with any reasonable degree of accuracy.

Islet tissue is normally present in an amount far in excess of the enzyme requirement. Therefore unless a considerable portion of the gland is diseased there is no increase in diastase in the blood or urine or decrease in the forces or duodenal contents except in cases of obstruction to the outflow of digestive enzymes.

The authors review the results of numerous tests of pancreatic function reported in the literature. None of the verified tests is of striking value except Wohlgemuth's and McClure's determinations of fecal amylase which indicate obstruction to the outflow of pancreatic secretion.

Amylase is the most reliable of the pancreatic enzymes for stool tests. The authors used the Hawk modification of the Wohlgemuth test and the starch iodine reaction in preference to the copper reduction reaction. Fecal amylase determinations in normal persons were made in three groups of five subjects each on a fixed diet. The diastase seemed to vary with the diet and a given diet had practically the same stimulating effect on the pancreas in all normal persons.

Determinations of fecal amylase were then made in a series of cases of chronic pancreatitis cholelithiasis cholecystitis choledocholithiasis and cancer of the pancreas. These demonstrated that duct obstruction as well as diffuse involvement of the pancreas produces a decrease in fecal amylase. Mild involvement of the pancreas however cannot be determined by this method.

Experimental work on dogs showed that the administration of 1.5 per cent lactic acid or 10 per cent sodium bicarbonate through a jejunal fistula stimulated pancreatic secretion as determined by fecal amylase tests. If a satisfactory pancreatic stimulant such as purified secretin can be found fecal amylase tests may be of value.

STANLEY H. MENTZER M.D.

Geinitz R. Hyperglycemia in Acute Pancreatic Necrosis (Hyperglycemia bei akuter Pankreasnekrose). *Zentralbl f. Chir* 1928 p. 2059.

The patient whose case is reported was a woman of forty four years with total pancreatic necrosis of

the hemorrhagic variety. On the fourth day after operation pus appeared in the urine and the blood sugar value was 341 mgm. Twenty units of insulin were then given subcutaneously three times a day. At the end of a week the blood sugar was 236 mgm. Death occurred eleven days later.

The remarkable features of this case were the high blood sugar, the good effect of the insulin and the presence of stones in the bile passages which were probably the cause of the pancreatic necrosis.

WORTHMAN (Z)

Henschen C and Reissinger H. Contributions on the Clinical Physiology of the Spleen. Experimental Studies of the Variations in Volume and the Contractility of the Spleen. Its Circulation and the Closure Mechanism of the Splenic Artery. (Beiträge zur klinischen Physiologie der Milz. Experimentelle Untersuchungen über die Volumenschwankungen und die Contractilität der Milz, über ihre Durchblutung und über die Sperrmechanismen der Milzarterie). Deutsche Zeitsch f Chir. 1928 ccx 1.

The authors studied first the effect of the most commonly used anesthetics on the volume of the spleen. They found that in deep ether anesthesia there was no change in the blood pressure and the splenic volume remained unchanged. In chloroform anesthesia both the blood pressure and the volume of the spleen decreased but after the anesthesia was discontinued they increased again. The spleen shut itself off from the rest of the splanchnic area. In the vessels of the brain and intestines the circulatory rate increased whereas in those of the extremities and spleen it decreased. The authors conclude that the decrease in the red blood cells with an unchanged hemoglobin content during chloroform anesthesia is not due to splenic function.

Further experiments dealt with the effect of loss of blood of pericardial effusion affecting the heart force and of adrenalin on the volume of the spleen.

From the summary and conclusions it is seen that ether has no effect on the hemodynamic function of the spleen whereas chloroform has an irritative action on the neuromuscular mechanism of the spleen causing it to contract. Therefore in sepsis chloroform is to be avoided in order to prevent the entrance of a flood of toxins and bacteria into the circulation. In hemorrhage the spleen often acts as a protective organ equalizing the loss by giving up blood to the circulation. In infusions and transfusions the spleen may prevent overloading by taking up the excess. Following pericardial effusion affecting the heart force a decrease in the volume of the spleen was noted. Adrenalin decreased the size of the spleen. Therefore by painting adrenalin on the surface of the spleen or injecting it into the organ it might be possible to avoid splenectomy.

The rest of the article deals with the blood supply of the spleen. The amount of blood flowing through the organ even in the resting state is astonishing. At the beginning of the influence of adrenalin the quantity of blood is reduced three and one fourth

times but the blood pressure remains high so that the function of the spleen remains constant. With cessation of the action of adrenalin the quantity of blood flowing through increases to more than the initial values (enlargement of the spleen begins). When the spleen contracts resistance within it increases so that less blood flows through.

Further investigations dealt with the self exclusion of the spleen from the circulation. Glass (Z)

## MISCELLANEOUS

Lemon W S. The Function of the Diaphragm. Arch Surg. 1918 lxxv 840.

The diaphragm develops high up toward the head from a five fold embryonic origin: (1) the septum transversum; (2) 3 derivatives of the mesentery; (4) derivatives of the pleuroperitoneal membrane; and (5) derivatives of the body wall. It then migrates caudally into the coelom and constitutes the first partition dividing the coelom into its two primary divisions. The division of the coelom into two compartments by the diaphragm is therefore a function of the diaphragm.

By comparing embryological and anatomical study with a study of function it is learned that when new function is required because of expanding activities and new environmental changes organs develop to make the new function mechanically possible. New organs appear to perform functions. Respiration however is a fundamental function which was developed long before the diaphragm developed. The diaphragm came to its perfection when the functional activities of mammals required the power to increase pressure within the coelom at will and at the same time required protection of the heart and lungs from the effect of such temporary excessive pressure. Development of this function is necessary for the birth of offspring. It is logical then to believe that the primary function of the diaphragm is to provide for increased intracoelomic pressure. When the diaphragm developed rhythmic motion it became a true respiratory organ, its contractions increasing the long diameter and the volume of the chest, increasing the negativity of pressure and causing air to fill the lungs and blood to flow into the heart. It therefore appears that the diaphragm is an organ designed primarily to effect pressure within the coelom by acting in opposition to the muscles of the abdomen and that it has a secondary function involving both respiration and circulation.

Surgical procedures and experimental study on animals have challenged the importance of the diaphragm as an organ of respiration. The results of such experimental work are outlined as follows:

1. In animals as well as patients on whom unilateral phrenic neurectomies had been done paralysis of the hemidiaphragm resulted, rendering this portion of the organ functionless except in the capacity of a partition which divided the coelom into two parts. The usual rhythmic movements were carried on by the intercostal and the accessory muscles



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# GYNECOLOGY

## UTERUS

Damm P. The Operative Treatment of Prolapse with Special Reference to the Interposition Method. *Acta obst et gynec Scand* 1928 vii 179

This report is based on 231 cases of prolapse treated in Diakonissestiftelsen in the period from 1912 to 1926. Interposition of the uterus was done 105 times chiefly in cases of marked prolapse. In the cases of 24 women who were still menstruating the operation was supplemented by bilateral resection of the tubes. Amputation of the cervix was performed only when there was hypertrophic elongation. A senile atrophic uterus was regarded as a contra indication. In cases of hypertrophy of the corpus a wedge was excised from the anterior wall. A double plastic operation on the vagina consisting of anterior colporrhaphy by the Cersuny Sanger or Forsner method and colpoperineorrhaphy was performed 79 times.

There were 4 postoperative deaths. The mortality of the interposition operation was 3.8 per cent. Two of the deaths following this procedure were due to intercurrent causes. In a case of strangulation hemorrhage the interposition was followed by vaginal hysterectomy. In 1 case an interposition operation supplemented by the enucleation of fibromata was complicated by infection.

One hundred and one of the patients were subsequently re-examined at the hospital and 79 were questioned by letter. Of the latter 19 were re-examined by their family physician. The incidence of recurrence following the various operations was as follows: interposition operation 4.7 per cent, double plastic operation 11.9 per cent, and colpoperineorrhaphy 7.4 per cent.

Phaneuf L. E. The Benign Lesions of the Uterine Cervix and Their Treatment. *New England J Med* 1928 cxix 1243

The common benign lesions of the cervix are endocervicitis, lacerations and polyps. Endocervicitis may be secondary to gonorrhea or postpartum or postabortal infection. It usually persists after infection of the other genital organs has subsided. Sturmdorf, Curtis, Matthews and Davis have demonstrated that chronic endocervicitis is an infection of the cervical mucosa which may spread to the deeper cervical structures and the parametria, tubes, ovaries and pelvic peritoneum. Cervical erosions follow endocervicitis. In chronic infections the cervical mucosa is everted and the mucosa of the portio vaginalis in the region of the external os develops a circumscribed area of glandular proliferation. Under the stimulus of the infection the cervical cylindrical epithelium extrudes itself on the outer

portion of the cervical rim replacing the normal stratified epithelium and thereby forming the erosion or red area found in that region. Accordingly the erosion is not an ulceration but the formation of new glandular tissue which may be regarded as precancerous. When the glands become occluded and filled with mucus they are called nabothian cysts.

Endocervicitis may be treated by the local application of antiseptics by cauterization or by radium irradiation. In the severe forms the best results are obtained by the tracheloplasty of Sturmdorf.

The treatment of lacerations of the cervix varies with their severity. Slight tears usually heal spontaneously or respond to cauterization and diathermy. The more severe lacerations may be treated by the Emmett or the Sturmdorf operation. Obstetrical lacerations of the cervix should not be repaired until the edema has completely subsided and normal involution of the uterus has taken place.

Cervical polyps should be removed. Their removal may be simple when they are single, but becomes complicated when they are numerous. Occasionally amputation of the cervix above the polyp bearing area is necessary. In some cases curettage of the base followed by small doses of radium will effect a cure.

Adequate treatment of endocervicitis and of cervical lacerations and polyps will relieve the symptoms of these conditions and lower the incidence of cancer of the cervix.

SAMUEL J. FOGELSON, M.D.

Fitzgibbon G. Fibromyomata. *Irish J M Sc* 1928 No 36 733

Fibroids develop as a rule between the ages of thirty and thirty-five years and reach their full growth in a few years. After their development they remain quiescent until the changes of the menopause begin when in the majority of cases they give rise to symptoms. Degeneration of fibroids tends to occur at the time of the menopause. Unmarried women are more prone to develop fibroids than married women. Fibroid is a cause of sterility but sterility is not a cause of fibroids. The association of fibroids with pregnancy is uncommon. The incidence of malignancy in fibroids is about 2 per cent. The malignancy is an associated rather than a secondary development.

Before the menopause myomectomy has a large place in the treatment of fibroids. When pregnancy is complicated by fibroids causing symptoms myomectomy may be performed during the early months with safety. Myomectomy is not followed by the ill health that results from hysterectomy and does not lead to trouble later in the menopause.

The author reviews 210 operations for fibromata of the uterus.

ABRAHAM A. BRACER, M.D.

Compensation was so good a factor in respiration and the diaphragm of such secondary importance that the movements of the chest wall as a whole or of any of its parts were not influenced by the paralysis. This conclusion is established by observations, clinical examinations, kymographic records and measurements of the expansive excursion. Casual observers were unable to distinguish the phrenectomized animal from the normal animal. Patients with the phrenic neurectomy show the same clinical result.

2 After unilateral section of all of the intercostal nerves in dogs the animals lived comfortably and compensatory function was so complete that it was with difficulty that any loss of either thoracic movement or response to exercise was seen. This was true also when the intercostal nerves were bilaterally sectioned when one phrenic was evulsed and when both were made functionless. It was only when a very large part of the muscular equipment was functionless that compensation began to fail and from this point compensation failed in direct relation to the loss of muscular equipment.

3 Animals with half the diaphragm paralyzed or with the whole muscle rendered functionless regained the immediate loss in vital capacity before the surgical wound healed and enjoyed activities as strenuous as those enjoyed by normal animals. The spirometer showed that they made use of the same amount of air in a unit of time as their normal mates of the same weight. Patients responded in the same way.

4 Dog and man can live and maintain tidal air requirements when all diaphragmatic function is lost and when all but the diaphragmatic action is lost.

5 In a study of the effect of unilateral phrenicotomy on the ability of the lung to aspirate bronchial material into remote portions of the bronchial tree it was found that the lung was put at rest by shortening the long diameter of the thorax and by pre-

venting movement in that diameter but that suction during inspiration was sufficient to cause ascent of the bronchial material.

6 The diaphragm is a muscular partition dividing the coelom into two parts. Its two chief functions are the provision of an increase in pressure within the coelom when this is required and a respiratory function dependent upon its ability to contract rhythmically and synchronously with other respiratory muscles.

7 Compensation is so powerful that diaphragmatic paralysis does not greatly alter respiration or circulation and has little if any effect on other muscles of respiration.

Caldbeck S L. Two Cases of Visceral Fistula Treated without Secondary Operation. *S. & Clin. N. Am.* 1925 vol. 1337.

Caldbeck reports two cases of visceral fistula developing after abdominal operation and urges conservative treatment of such fistulae.

In one case the fistula developed on the fourth day after an operation for the excision of a perforated gastric ulcer and removal of the diseased appendix and gall bladder. It drained gastric contents. The patient made a complete recovery and left the hospital on the thirtieth day.

In the other case the duodenum was injured in the course of a difficult operation for stones in the common duct. It was immediately repaired but on the third day after the operation there was a profuse discharge of fecal matter and undigested food through the incision. When the patient left the hospital on the thirty-fifth day a slight drainage of bile still persisted but ultimately complete recovery resulted.

In the management of these cases 10 per cent glucose and physiological salt solution were used freely. L. C. P. Gaudin, D.

relation to the menstrual period whereas in 17 it occurred within three days before or after the period and in 22 it occurred during the menstrual flow. At the time of menstruation 19 of the women had been given treatment and 20 had not. The medication which was followed most frequently by adnexal involvement was that which caused the most marked general reaction—the use of the various silver and dye preparations. Vaccine therapy had much more favorable results. High fever seemed to be particularly dangerous since in the cases of 33 women who were given general treatment with various preparations and who had no fever there was no adnexal involvement. Accordingly the author believes that Zeiler's vaccine treatment should be used more extensively but not during the menstrual periods. As local treatment he recommends 1 unit capsules together with the use of cervical suppositories. In the cases reviewed the incidence of adnexal involvement after such treatment was only 6 per cent.

Of the 49 women who had adnexal involvement when they were admitted to the hospital the condition was chronic in 32.

Of 122 women who were traced 19 had had 1 recurrence, 2 had had 2 recurrences and had had 3 recurrences. In 12 instances the cause was believed to be the menses or the treatment and in 5 cases both the menses and the treatment.

In the cases of gonorrhoea of the uterus a cure was obtained in 89 per cent (at least 3 provocative treatments with 7 microscopic examinations) whereas in those with adnexal involvement the incidence of cure was 86 per cent. HANNA (G)

**Komocki W.** A Case of Bilateral Anghiohypernephroma of the Ovary (Ein Fall von beiderseitigen Anghiohypernephroid des Ovariums). *Arch f path Anat* 1928 cliv 70.

Bilateral tumors were removed from the small pelvis of a woman thirty-seven years of age who had menstruated normally up to the day of operation. The tumors were composed of dark red areas (blood vessels) and bright yellow areas (fatty cell columns with a honeycomb appearance). The diagnosis of hypernephroma was made from the histological findings. The author assumes that the tumors developed in the ovaries as no trace of these organs could be found at operation. KAUFMAN (G)

#### EXTERNAL GENITALIA

**Greenhill J P.** Vaginal Discharge Due to Trichomonas vaginalis. In *J Obst & Gynec* 1928 xvi 80.

The trichomonas vaginalis is a parasitic flagellated protozoan which causes a persistent yellowish green bubbly vaginal discharge. It is very difficult to detect in stained smears but is easily identified by the hanging drop method.

Greenhill describes the technique of collecting the specimen from the vagina, the method of setting up the hanging drop slide and the characteristics of the

organism. His method of treating the vaginal discharge consists in the use of green soap, methylene blue, glycerine and lactic acid. Of forty-eight patients subjected to this treatment and followed up subsequently 89.6 per cent were found to be cured. The duration of the cure ranged from two to forty-eight months. HARVEY B. MATTHEWS M.D.

**Bissell D.** Genito Urinary Fistula in the Female with an Appreciation of Sims and His Work. *Proc Roy Soc Med Lond* 1928 xvi 179.

Bissell urges more general use of the Sims method of closing genito urinary fistulae in the female. In describing the technique of this operation he emphasizes that the denudation around the vaginal orifice of the fistula should be broad and elliptical and should extend down to the immediate region of the bladder mucosa but never into it. The needle should penetrate deeply the vesicovaginal septum but should not enter the bladder mucosa. A silver wire suture is attached to a carrying thread which in turn is attached to the needle. The wire loop by which the wire is attached to the carrying thread should be crushed so that it will meet with minimal resistance on being pulled through the tissues. The wires should be twisted only enough to appose the denuded tissues snugly. ABRAHAM A. BRAUER M.D.

#### MISCELLANEOUS

**Benthin W.** Genital Hæmorrhages in Old Women (Centale Blutungen im Greisenalter bei Frauen). *Deutsche med Wchnschr* 1928 liv 727.

In 56 of 131 cases of genital hæmorrhages in old women the bleeding was due to carcinoma. In 75 cases there was no neoplasia.

The causes of genital hæmorrhage in old women include senile adhesive colpitis, ulceration associated with prolapse, ulceration due to the pressure of a pessary, urethral polyps, pruritis leucoplakia with scratch wounds and malignancy of the labia urethra and vagina. The causes in the upper portions of the genital tract are cervical polyps, erosions of the portio, trauma, injuries from coitus, tuberculous ulcers and varices. Those in the body of the uterus are submucous myomata, carcinomata and benign processes.

In the cases reviewed inflammatory processes in the endometrium were common, their incidence being more than 50 per cent. In 2 cases they were associated with an ovarian tumor. Mucous polyps were found in from 25 to 30 per cent of the cases. Such polyps are often very vascular and bleed profusely. They are frequently associated with marked thickening of the myometrium. Another cause of genital hæmorrhage in old age is apoplexy of the uterus.

Before treatment is begun it is important to make an exact diagnosis of the location and cause of the hæmorrhage. In the examination the bladder must not be forgotten. Microscopic examination of removed tissue is essential.

Thaler II Lipoma of the Uterus (Weber Uterus lipome) *Arch f Gynaek* 1928 **cxxxv** 350

Two cases of lipoma of the uterus are reported. The first was that of a woman sixty five years old whose menopause had occurred seventeen years before. For one year the patient had noticed enlargement of the abdomen associated with emaciation. Examination revealed a spherical uterine tumor which extended three fingerbreadths above the umbilicus. Total extirpation was done. In the right wall of the uterus there was an intramuscular tumor the size of a child's head. Cut section revealed the center to be colored like the yolk of an egg. Around the center there was a bluish yellow zone and external to that zone a firm layer of white tissue. Histological examination showed the tumor to consist partly of pure lipomatous tissue and partly of fibrolipomatous tissue.

In the second case the uterus was removed for colloid carcinoma and the right uterine wall showed an intramural lipoma the size of a cherry.

Lipoma and fibrolipoma of the uterus have been reported in the literature only five times.

NEUMANN (G)

Schmitz II The Diagnosis and Treatment of Uterine Cancer *New England J Med* 1928 **cxcix** 1149

Carcinoma of the cervix begins as a solitary focus a nodule. It never grows in healthy tissues or organs. The second stage of carcinoma is that of ulceration. This is due to the characteristic tendency of carcinoma cells to decay because of their poor blood supply. When the carcinomatous ulcer is touched with an applicator it bleeds freely and the bleeding is arterial and continuous. When the case is seen at this stage excision of the ulcer should be done for diagnosis. The first two stages do not cause symptoms. In the third stage of portio carcinoma there is friability or necrosis of the tumor tissue with a reddish brown or sanguinous discharge and a cadaveric or putrid odor due to infection.

The first sign of cancer of the body of the uterus is irregular bleeding. This cancer is especially deceiving because the external os and the vaginal mucosa may appear perfectly normal. When a thin stream of bright red blood escapes from the cervical canal on the introduction of a sound and especially when the trickling of blood continues for some time after the manipulation malignancy should be suspected. The cervical canal should then be dilated and an immediate frozen section examination made of curetted tissue.

The author classifies carcinomata into four groups:

1. The clearly localized carcinoma. This tumor is the size of a navy bean and has not affected the mobility of the uterus.

2. The borderline carcinoma. There is a wide or peripheral invasion of the cervix or body of the uterus. The paracervical tissues have a doughy consistency and the mobility of the uterus is decreased.

3. The inoperable carcinoma. There is infiltration of one or both parametria with or without regional lymphatic involvement and with or without invasion of adjacent organs. As a mass the structures are still movable.

4. The terminal carcinoma. This tumor is characterized by fixation of tissue, wide local extent of the disease and distant metastases.

Cases in Group 1 are treated either surgically or with radium. Those in Group 2 with radium and the X rays by a combined method which is described. Those in Group 3 by radium and X ray treatment and those in Group 4 by palliative measures. A cancer that is fixed always offers an unfavorable prognosis.

The five year end results obtained in 331 cases of primary carcinoma of the uterine cervix treated with the combined radium and X ray method were as follows:

Group	Total No.	No. Survived 5 Years
1	23	18
2	43	20
3	161	20
4	100	00

HARRY W. FISK M.D.

## ADNEXAL AND PERIUTERINE CONDITIONS

Reisner A. The Relation of Local and General Treatment of Gonorrhoea in the Female to Extension of the Condition to the Uterine Adnexa (Die Bedeutung der oertlichen und allg. meinen Behandlung des Trippers beim Weibe fuer die weitere Ausbreitung auf die Gebaermutterhaengen). *Ztschr f Geburtsh u Gynaek* 1928 **cxcix** 676

In the cases of 401 women with gonorrhoea who were given careful study (regular examinations of the adnexa by a gynecologist) Reisner found that in 76 per cent the site of the gonorrhoeal infection was the uterine cervix. The cause of the extent of the infection to the adnexa may have been the flow of blood and serum in the puerperium or during the menstrual period or any procedure at other times which resulted in contractions of the uterus and the propulsion of its contents in the direction of the tubes. Among causes of the latter type are dilatation and foreign body irritation. Therefore the author gives large doses of papaverin daily during the treatment of gonorrhoea.

One hundred and thirty four (33 per cent) of the women had adnexal disease. In 49 cases the adnexa were diseased when the patient entered the hospital. In 67 the adnexal involvement began during the patient's stay in the hospital and in 6 it began during the puerperium. The time at which it began in 12 cases is not stated. In about one half of the cases it had an acute onset in 5 it began insidiously and in the remainder it developed over a period of several days. In most cases the fever was moderate in only a fourth it was over 39 degrees C. In 25 cases the extension to the adnexa did not show any

# OBSTETRICS

## PREGNANCY AND ITS COMPLICATIONS

Guthmann II The Practical and Scientific Value of the Lateral Roentgenogram in Pregnancy (Was leistet die seitliche Schwangerschaftsaufnahme fuer Wissenschaft und Praxis?) *Zentralbl f Gynaek* 1928 II 1905

The author reports his studies with short distance exposures which have the advantage of placing a smaller load on the tube but require somewhat more correction of magnification errors and his studies with exposures made at a distance of 2 meters in which the pelvic diameters on the plate are always multiplied by the factor 0.91. In the latter he increased the current to from 80 to 100 kv which in serial roentgenograms proved to be the most suitable current. When a lesser voltage is used the roentgenograms show less contrast and when a greater voltage is used the picture is rendered less distinct by scattered rays. Nevertheless it is possible also with 140 kv and a therapy apparatus to make sufficiently distinct roentgenograms (6 ma exposure of thirty seconds Potter Bucky diaphragm and 0.2 mm of copper).

For exposures at a distance with a diagnostic apparatus the factors necessary are a distance of 220 cm 82 kv 50 ma a filter of 0.2 mm of copper and an exposure of two hundred and thirty seconds. For near exposures the corresponding factors are a distance of 60 cm 82 kv 100 ma a filter of 0.2 mm of copper and an exposure of from ten to twelve seconds. Because of the longer time it requires the distant exposure is less economical than the near exposure.

The lateral view shows the form of the sacral concavity and the position and mobility of the coccyx. The author found the promontorium at the level of the pelvic inlet in only about 15 per cent of the cases. In the majority it was more or less higher. Therefore it is impossible to determine the level of the pelvic inlet correctly by the method of Fabre.

With regard to the prognosis of labor in cases of narrow pelvis the lateral exposure gives more information than the frontal exposure. When in a case of generally contracted pelvis there is extreme flexion of the child's head and the conjugata vera is only from 5 to 7 mm greater than the diameter of the head it may be concluded that even maximal moulding will not permit passage of the head. If the external conjugate is from 17 to 18 cm or less the difference between the conjugata vera and diagonalis becomes still less.

The inclination of the symphysis and of the pelvis may be determined exactly by the lateral exposure. Also by this method it is possible to measure the diameter of the child's head exactly and to deter-

mine the shape of the head its level in the pelvis (which is of importance when the abdominal wall is (at nr rigid) its engagement and its position. Anomalies of position are detected more readily in the roentgenogram than by external palpation. The author frequently found a posterior parietal presentation in a pelvis with entirely normal measurements but this was usually corrected spontaneously in the further course of the labor.

Serial lateral exposures during the progress of labor give a good insight into the mechanical processes of labor and will probably clear up many of the problems that as yet are unsolved.

KABOTH (G)

Eufinger II The Function of the Liver in Pregnancy II The Occurrence of Viscerosensory Hepatic Bile Reflexes in Pregnancy (Die Leberfunktion in der Schwangerschaft II Das Auftreten viscerosensibler Lebergallenreflexe in der Schwangerschaft) *Arch f Gynaek* 1928 cxviii 733

It was shown by Westphal's investigations that during pregnancy there is a variation in the function of the biliary tract. In a review of the case histories of the Frankfurt Gynecological Clinic the author found that in 4,070 deliveries in a period of three years pronounced gall stone colic occurred 24 times and icterus 15 times. Eufinger believes that in the viscerosensory reflexes of Head and Mackenzie we have phenomena which are of value in the diagnosis of disease of an internal organ especially since these reflexes can be elicited after the other clinical signs have disappeared and therefore reveal latent conditions of irritation. According to Head and Mackenzie the spinal cord segments for the liver and biliary tract are the seventh to the tenth dorsal segments.

The author's investigations indicate that viscerosensory skin reflexes in the so called Head zones can be demonstrated for these dorsal segments in about 35 per cent of cases of normal pregnancy. As the pregnancy progresses the probability that the reflexes can be elicited becomes greater. No difference is found between primiparae and multiparae. In the puerperium no zones are discoverable.

The author is convinced that these results are evidence of a functional disturbance of the liver and biliary tract particularly in the later months of pregnancy as they are accompanied by a corresponding increase in bilirubin values. In cases of hyperemesis and icterus he regularly noted a hepatic zone. In the other toxemias there was no deviation from the normal. The author believes that the influence of the constitution can be excluded as the sign did not appear exclusively or with greater frequency in persons with vegetative stigmata.

BOCK (G)

The purpose of this article is to emphasize the frequency of benign causes of genital hemorrhages in old women and the importance of a correct diagnosis

BOHNER (G)

Williams E The Acute Pelvis *Brit M J* 1928 ii 978

The author divides his cases of acute pelvic conditions into those with fever and those with shock. Of the conditions in the first group he discusses chiefly acute salpingitis and of those in the second group extra uterine pregnancy and twisted ovarian cyst. He emphasizes the importance of thorough examination of the entire abdomen in the diagnosis and of sufficient exposure at operation to allow thorough exploration.

CARL H DAVIS M D

Jarcho J The Artificial Production of Sterility  
*Am J Obst & Gynec* 1928 xvi 813

The artificial production of sterility is a subject of much importance to the physician who is called upon to advise married women who are physically unfit

to bear children. It is generally agreed that such women should be instructed with regard to contraceptive technique or if they become pregnant subjected to therapeutic abortion.

The use of contraceptives is inconvenient and unreliable and as it interferes with normal intercourse it must be more or less harmful to the nervous system. Surgically induced sterility is usually permanent.

During the last few years considerable work has been done with regard to the biological prevention of conception in female animals by the injection of placental or ovarian extracts of pregnant animals, the transplantation of ovaries of pregnant animals and the parenteral introduction of spermatozoa.

Jarcho states that although it is still in the experimental stage biological immunization of the female organism to seminal products (spermatotoxin) offers great promise as a clinical means of producing temporary sterility. As the method will be entirely in the hands of the physician it can be used only for therapeutic purposes. HARVEY B MARTINUS M D

# Lane Roberts C S Abdominal Pain in Pregnancy *Lancet* 1928 ccv. 1 88

Among the most frequent causes of abdominal pain in pregnancy are constipation flatulence and the stretching of an unduly sensitive uterus the abdominal skin and the round ligaments Cases in which the pain is of organic origin may be divided into three groups (1) those in which the pain seems to be limited to the uterus (2) those in which it originates in the adnexa and (3) those in which it is due to extragenital conditions

Pain limited to the uterus may be due to undue stretching of the uterus such as occurs in dual pregnancies and polyhydramnios to fibromata particularly those of the subperitoneal pedunculated type multiple fibromata causing pressure and fibromata undergoing degenerative changes to concealed haemorrhage to hydatiform mole causing sudden stretching of the uterus or to rupture of the uterus

Among the causes of pain originating in the adnexa are the rupture of an extra uterine pregnancy ovarian tumors causing pressure rupturing or undergoing axial rotation or degenerative changes salpingitis and salpingo oophoritis blood in the peritoneal cavity from the rupture of a tubal ovarian or cornual pregnancy or an old uterine scar and abdominal pregnancy near or at term

Extragenital conditions which may be the cause of pain during pregnancy include the pyelitis of pregnancy acute appendicitis intestinal obstruction cholecystitis and allied gall bladder lesions acute pneumonia renal ureteral and vesical calculi and acute suppurative pelvic peritonitis

HARVEY B MATTHEWS M D

## Pohl A The Early Diagnosis Etiology and Treatment of the Pernicious Type of Anæmia in Pregnancy (Zur Frühdiaagnose Ätiologie und Therapie der perniciosartigen Graviditätsanämie) *Zentralbl f Gynæk* 1928 lii 1384

The increase in the number of reports of pernicious types of anæmia in pregnancy has been due without doubt to the work of Esch which was published in 1917 As a rule the diagnosis is not made until the anæmia is well developed The author believes that the case he reports in this article represented the first stages of the condition as several of the chief symptoms mentioned by Esch were absent and that the cure was due to interruption of the pregnancy

The patient was a twenty year old primigravida with no history of chlorosis Since the second month of her pregnancy she had had a cystopelitis In the fourth month the hæmoglobin was 50 per cent In the sixth month the hæmoglobin was 42 per cent the erythrocyte count 3 000 000 the color index 0.66 and the leucocyte count 8 300 Anisocytosis and polychromasia were noted Smears showed only 9 per cent of lymphocytes and no nucleated red cells

One gram of reduced iron was administered daily and injections of solarson were given Later Fowler's solution was used

During the course of the illness the erythrocytes decreased in number The hæmoglobin at first remained stationary and then increased The color index rose but was never above 1 Macrocytes appeared in large numbers The urine showed urobilin and the cystitis persisted

A diagnosis of anæmia of a pernicious type having been made abortion was induced in the seventh month of the pregnancy There was a very slight loss of blood with a high rise in the temperature

The interruption of the pregnancy was followed by marked improvement in the subjective symptoms and in the blood picture Five weeks later the hæmoglobin was 62 per cent and the erythrocyte count 4 000 000 After three and a half months the hæmoglobin was 74 per cent and the color index 0.8

Throughout the illness there was no oedema icterus or enlargement of the spleen

According to Esch the variations in the blood picture are so frequent and pronounced that the diagnosis remains uncertain during life and is confirmed only by postmortem examination

The author discusses the symptoms that have been described and emphasizes the difficulty of differentiating the condition from chlorosis He assumes that in both conditions the cause is a disturbance of internal secretion and that therefore there may be a transition from chlorosis to the pernicious form of anæmia In this and in the belief that the anæmia is not a distinct clinical entity he disagrees with Esch The frequent occurrence of the anæmia in certain localities such as Zurich and Parma he ascribes to poor constitution of the inhabitants evidenced by a functional weakness of the bone marrow Oettinger's question as to the possibility of a recurrence of the anæmia in a new pregnancy he answers in the affirmative on the basis of the literature He does not approve of sterilization but believes that interruption of pregnancy is imperative when the diagnosis is made early

BOCH (C)

## Jagić N The Indications for the Interruption of Pregnancy in Diseases of the Circulatory System (Ueber Indikationen zur Schwangerschaftsunterbrechung bei Erkrankungen des Zirkulationsapparates) *Beitr z gerichtl Med* 1928 viii 26

In the management of cases of cardiac defects in which pregnancy may be allowed to continue it must be borne in mind that external injuries may cause an exacerbation of the cardiac condition Pregnant women seem to be especially disposed to recurrent endocarditis following anginas and infections When a recrudescence of endocarditis develops there is usually the picture of cardiac insufficiency because of involvement of the heart muscle Therefore the management of the case must include protection against infection proper regulation of rest and activity and regulation of the diet to prevent unnecessary meteorism The aldehyde reaction in the urine after activity as the sign of stasis in the liver



Grossen R J and Moore S. Cholecystographic Studies in Pregnancy. *Am J Obst & Gynec* 1928 xvi 840

In a series of twenty two pregnant women cholecystography was attempted by the intravenous method with the use of the sodium salt of phenol tetraiodophthalein. The technique and dosage recommended by Graham Cole Copher and Moore were employed. The chief purpose of the examinations was to determine whether changes in gall bladder function occur during gestation which would explain the rôle of pregnancy in the production of gall bladder disease. In the cases of four women with signs of the toxæmia of pregnancy the attempt was made to determine whether the estimation of the retention of the dye in the blood stream combined with cholecystography is a more delicate method of demonstrating a decrease of liver function than the dye retention test alone. The possibility of diffusion of the cholecystographic dye through the placenta was also considered. All films being carefully studied for the image of the fetal gall bladder.

The method of making liver functional tests with sodium phenotetraiodophthalein is quite similar to that used with phenoltetrachlorophthalein or bromsulphthalein. Function is considered normal when the retention of phenotetraiodophthalein in the blood serum is less than 12 per cent one half hour after the injection and less than 4 per cent one hour after the injection and when the sum of the one half hour and hour retentions is 16 per cent.

In the four cases of toxæmia the test was carried out in the twelfth, fourteenth to sixteenth, fortieth and fortieth week of gestation respectively. Three of the twenty two women had a retention of from 5 to 10 per cent but showed no signs of toxæmia. In one case cholecystography failed on account of the enormous size of the patient. One patient showed clinical evidence of cholecystitis. If these cases are subtracted from the total number there were thirteen apparently normal cases without gall bladder symptoms, toxæmia or dye retention in the blood. In six cases in this group there was non visualization and in two cases only faint visualization of the gall bladder. Therefore in eight of the thirteen cases abnormal cholecystograms were obtained and in only five of that number or 38.4 per cent of the apparently normal subjects were the cholecystograms normal. Three of the women with normal cholecystograms were in the thirty sixth to fortieth weeks, one was in the twentieth week and one was in the twelfth week of gestation.

A possible cause of the failure of visualization of the gall bladder in the cases of normal pregnancy may have been increased intra abdominal tension or pressure on the organ or its ducts which prevented the dye from entering the vesicle or so affected the gall bladder that it was rendered unable to concentrate the bile. Regarding the first of these two possibilities the authors call attention to the fact that though there were five normal cases with non visualization of the gall bladder in the thirty fourth

to fortieth weeks of gestation there were also three similar cases with normal cholecystograms. This indicates that the mechanical factor of increased intra abdominal pressure if it is a factor at all is a most inconstant one.

With regard to the possible loss of the bile concentrating power of the gall bladder in the late months of pregnancy the authors state that if such a loss occurs it is overcome very rapidly as in two cases with non visualization of the organ before delivery there was normal visualization two weeks after delivery. The authors experience with cholecystography in conditions other than pregnancy has shown that if the concentrating power of the gall bladder is lost it is not regained until after a greater period than fourteen days.

The authors conclude that non visualization of the gall bladder in normal cases is due to the technical difficulties of making roentgenograms in the cases of pregnant women near term. They call attention to the fact that in such cases the X rays must pass through a large volume of tissue and fluid which produces scattering with loss of definition and that the increased volume of the abdominal contents increases the distance of the gall bladder from the film. Their theory is strengthened by the fact that in small subjects the gall bladder was more readily visualized than in large subjects. If this conclusion is correct it is the size of the abdomen and not the month of the gestation or any intrinsic change in the gall bladder that is responsible for non visualization.

In the cases of toxæmia the combination of the test of dye retention in the blood and cholecystography was not found to be more sensitive than the dye retention test alone. The one fatal case of severe toxæmia with a 50 per cent dye retention in the blood and good visualization of the gall bladder indicated that the damage to liver function produced by this condition must exceed 50 per cent in order greatly to influence cholecystography.

In none of the cases was a fetal gall bladder observed. Neither were traces of dye found in the blood from the umbilical cord. It seems evident therefore that the cholecystographic dyes do not pass through the placenta.

The cases with visualization of the gall bladder showed no delay in the emptying of the gall bladder such as was noted by Mann and Higgins and no other indication of stasis. However the emptying time of the organ was not determined by the use of the fat meal.

In conclusion the authors state that no essential difference in the functional activity of the gall bladder in pregnancy was observed. While the hypercholesteræmia which is normal in pregnancy may be a factor in the development of cholelithiasis and cholecystitis it is possible also that repeated puerperal infections which are so mild as to escape observation may be responsible for the greater incidence of these conditions in women who have borne children.

SAMUEL J. FOGLIO MD

delivery or because of uterine fatigue delivery is followed by hemorrhage

2 Failure to make a diagnosis. This difficulty is due chiefly to the fact that in all cases of occiput posterior position the head is somewhat extended and therefore the posterior fontanelle upon which the diagnosis depends to a great extent lies so far back and so high that it is not reached on vaginal examination. The obstetrician will usually be able to palpate the posterior fontanelle if when he feels only the anterior fontanelle he follows the sagittal suture as far posteriorly as possible.

3 An attempt to deliver the baby through an incompletely dilated cervix the first stage of labor in cases of occiput posterior position being frequently prolonged. This error is prevented by administering sufficient anesthetic to permit labor to continue until there is full dilatation of the cervix. When the head which lies in a posterior position will not rotate and will not descend under the force of strong second stage pains the use of a drug to stimulate uterine contractions such as pituitrin and the application of an extremely tight abdominal belt cause dangerous pressure on the head.

When the diagnosis of posterior position has been made and after sufficient delay in the second stage of labor no progress occurs operative interference becomes necessary.

The method of attempting delivery of the head in the posterior position is to be condemned as it is because of this position that the head does not descend. The force required to deliver the head while it is in the posterior position is entirely unjustifiable. It is the author's rule never to make traction upon a head in the posterior position and always to regard such a position as an abnormality to be corrected. The procedure of drawing the head down to a lower level of the pelvis and then rotating it with forceps is also to be avoided as the traction necessary to bring the head down to the pelvic floor is apt to cause great damage. The abnormality of position should be corrected at the pelvic plane in which the head is found. Traction with simultaneous rotation of the head is to be condemned because of the danger of injuring the birth canal by the twisting movement.

DeLee recently advocated rotating the head through repeated small arcs by continually readjusting the forceps until the head is brought into an anterior position. In the author's opinion this method is inexact and attended by danger to both the child and the birth canal because of the poor application of the forceps which through part of the procedure are applied to the head obliquely. A true cephalic application should be used in all cases and the rotation performed in one maneuver rather than in a number of stages with numerous reapplications of the forceps.

Manual rotation of the head is successful in many cases but in this maneuver the fetal head must be displaced to a higher pelvic level when it is grasped by the whole hand inserted into the vagina and is

very apt to return to its posterior position before the forceps may be applied unless the sculp is caught with a volsellum forceps a very undesirable procedure.

In the Cleveland Maternity Hospital occiput posterior position is managed in a definite routine manner. There is no interference in the first stage of labor unless an emergency develops. Pain is practically abolished by adequate anesthesia and normal progress is permitted until full dilatation results. It is usually possible to determine within the first hour of the second stage whether the head will rotate anteriorly or not. Under no condition is interference delayed until the uterus becomes tonically contracted or the head becomes impacted. Delay makes operative interference difficult.

When the head is above the pelvic brim or in the brim podalic version is the procedure of choice. This usually eliminates the use of high forceps the only exceptions being cases in which the uterus is so tonically contracted as to render version dangerous. When the head has passed the pelvic brim rotation with forceps having solid blades is done. The steps in the procedure are as follows:

- 1 Manual dilatation of the maternal soft parts.
- 2 Cephalic application of the forceps. This is the reverse of the usual application as the concavity of the forceps is toward the sinciput.

- 3 The blades of the forceps are brought in line with the long diameter of the head by depressing the handles before locking them.

- 4 The forceps are locked and the handles then raised and carried around in a sweeping circle in such a way as to keep the blades constantly in the same axis. The rotation is continued until the occiput is under the symphysis. There is absolutely no traction on the head during the rotation. Occasionally if the head seems to be slightly impacted it is loosened by a slight upward pressure.

- 5 After the rotation and before the blades are removed enough downward traction is made to fix the head in its new position.

- 6 The forceps are then removed and re applied as to a normally placed head.

SAMUEL J. FOGELSON, M.D.

Ivens F. The Scope of Caesarean Section. *Brit M J* 1928 II 1166

After reviewing the indications for caesarean section the author describes her technique for the classical operation which in the main is the generally accepted technique. This operation was performed in 295 consecutive cases without regard to potential or actual infection. The indications were those usually recognized. Even when the membranes had been ruptured for some time induction of labor or forcep delivery had been attempted or other vaginal manipulations had been done it was performed as in a clean case. No special preparation of the vagina was carried out. The only precautions taken in cases with suspected infection were drainage of the abdominal cavity and the administration of

of cardiac origin is often positive when other signs of decompensation are absent

In general interruption of pregnancy is indicated in all cases in which disturbances of compensation do not respond in a short time to cardiac tonics. The danger is greater in women past thirty years of age than in those who are younger. It should be borne in mind that even when the pregnancy is well tolerated in such cases the cardiac condition may become worse later.

In mitral insufficiency interruption of the pregnancy is to be considered only when marked signs of cardiac insufficiency fail to respond in a short time to cardiac tonics and rest. Hypertonia with hypertrophy of the heart due to arteriosclerosis, syphilis and infectious agents may cause weakening of the heart muscle after the thirtieth year of age. The probability that this sequel will develop is greater the higher the blood pressure in the stage of compensation and the more marked the cardiac hypertrophy. In such cases a decrease in the blood pressure is usually the first sign of the weakening of the heart. Cardiac insufficiency tends to develop also in diseases of the lungs and pleura, fibrous sclerotic processes, pulmonary emphysema and kyphoscoliosis. In these conditions interruption of pregnancy is indicated by signs of stasis pointing to weakness of the right heart.

In hyperthyreosis and Basedow's disease the circulatory system is always affected and interruption of pregnancy is indicated by dilatation of the heart especially when the general condition is poor.

Interruption of pregnancy is indicated also by severe cyanosis in association with congenital defects.

The author advocates interruption of pregnancy unconditionally in the cases of women with cardiac defects who have a history of decompensation during a previous pregnancy and in the cases of women with severe myocarditis, marked obesity, severe kyphoscoliosis and mitral stenosis associated with valvular insufficiency, in which the stenosis predominates over the regurgitation. Even when labor is well borne, irreparable disturbances of compensation may develop in the puerperium.

In cases of mitral stenosis the behavior of the left auricle must be especially considered. The murmur must not be judged by its intensity. In aortic insufficiency with disease of the mitral or bicuspid valve and in pericarditis with obliteration the pregnancy must be interrupted. Uteric mesoarteritis with considerable dilatation of the aorta leads very frequently to disease of the coronary vessels and heart muscle without direct signs of the latter. If in such cases the aortic valve is also insufficient, interruption of the pregnancy is indicated definitely.

KLEIN (G)

Titus P. The Influence of Blood Chemistry Studies on the Present Treatment of Pregnancy Toxemias. *J Med Soc N Jersey* 1928 xxv 771

It is generally believed that the toxemias of pregnancy are the result of a deficiency of glycogen due

to insufficiency of the carbohydrate intake and the demands of fetal and placental growth and uterine hypertrophy. The author's investigations have demonstrated also a close relationship between a sudden drop in the blood sugar and the occurrence of convulsions. The success of the intravenous administration of dextrose solution in both hyperemesis and eclampsia is explained by the blood chemistry. The usual toxic symptoms of hypoglycemia are absent in hyperemesis because the blood sugar decreases very slowly. The rapid pre-eclampsia and eclampsia process is usually preceded by a heavy intake of protein foods late in pregnancy. Glycogen depletion occurs rapidly. Liver and kidney changes result and convulsions occur.

The treatment of hyperemesis and eclampsia is essentially the same. In mild cases of hyperemesis, the patient should have frequent feedings of small amounts of food with a high carbohydrate content and one or two hours of rest in the morning and afternoon. In the more severe forms she should be hospitalized, nourishment by mouth should be withheld and intravenous injections of 25 per cent dextrose (300 c.c. at a time) should be given two or three times daily if necessary. Chloral and bromide administered by rectum produce total muscular relaxation. If improvement does not result within a reasonably short time a therapeutic abortion should be done and followed by the dextrose injection.

MAGNET I. U. 25 M.D.

## LABOR AND ITS COMPLICATIONS

Van Hoesen B. Scopolamine Anesthesia in the Second Stage of Abnormal Labor. *Am J Obstet Gynecol* 1928 vii 353

Scopolamine anesthesia during labor prevents fatigue and physical distress, allows the use of any operative procedure necessary to effect delivery, does not interfere with the normal contractions of the uterus and help to prevent trauma, loss of blood and asphyxia of the infant.

Experience in several thousand deliveries has demonstrated that scopolamine morphine anesthesia can be continued with advantage throughout the entire delivery and especially in the second stage of labor.

The author reports three illustrative cases.  
CARL H. DAVIS, M.D.

Bill A. H. The Problem of the Vortex Occlusio-posterior Position. *New England J Med* 1928 cxviii 1237

The difficulty in the management of the occiput posterior position is generally due to one of the three following causes:

1. Too great delay in delivery. When delivery is too long delayed there may be tonic contraction of the uterus which interferes with the procedure of choice. The delivery may be performed at a time when weakening of the fetal heart and the passage of meconium indicate that the baby cannot survive.

and thereby to defective corpus luteum formation. Even when the bleeding is irregular during lactation there is regular ovulation which acts as a guide to the cycle of bleeding in spite of the metrorrhagia. This type of bleeding is doubtless capable of exerting an unfavorable influence on the secretion of milk. Therefore the author recommends for such cases the administration of corpus luteum substance which frequently gives very good results.

SIEGERT (G)

Report of the Committee on Survey of the Incidence of Puerperal Septicæmia in Massachusetts in 1927. *New England J Med* 1928 cxciv 1253

The number of cases of puerperal sepsis recorded by the State Department of Vital Statistics of Massachusetts in 1927 was 140. The Committee on Puerperal Septicæmia received detailed histories of 94. The number of women delivered at home and the number of those delivered in a hospital were equal. There were twice as many normal deliveries as operative deliveries and also 5 precipitate labors. There were 20 cases of incomplete abortion and 5 deaths from sepsis after cesarean section.

The investigating committee concluded that the deaths from incomplete abortion and exogenous infection cannot be charged to laxity of the medical attendant but they recommended that the greatest care be observed by members of the medical profession in the management of obstetrical cases.

CARL H DAVIS M D

Armstrong R R and Shaw W. Streptococcal Vaccines in the Treatment of Puerperal Sepsis. *Bull J* 1928 ii 1087

From their clinical and experimental observations the authors conclude that puerperal morbidities is due in the main to a single cause, the streptococcus pyogenes. As spontaneous recovery has resulted in all but a few of their cases they believe that in the

prevention of sepsis the use of special remedies such as vaccines is of secondary importance to conservative and aseptic midwifery. CARL H DAVIS M D

## MISCELLANEOUS

Radwansky S. The Behavior of the Blood Platelets in Labor, the Puerperium and Certain Obstetrical Complications. (Das Verhalten der Blutplättchen bei der Geburt im Kindbett und einigen obstetrischen Komplikationen). *Orvoskép és* 1928 xviii 136

From 300 blood platelet counts in the cases of 103 women the author draws the following conclusions:

During pregnancy and just preceding delivery the number of blood platelets is the same as in non-pregnant women. The greater the loss of blood during labor the sooner thereafter the number of blood platelets begins to rise and the longer it requires to return to the normal. After minor losses of blood the count is almost doubled; after moderate losses it is more than doubled and after severe losses it may be even tripled.

The number of erythrocytes decreases after delivery in proportion to the amount of blood lost and then gradually returns to normal. It reaches normal at the same time that the number of blood platelets ceases to increase. In cases with large losses of blood and in cases of long continued puerperal bleeding the replacement of blood corpuscles and the increase in the blood platelet count continue longer. Therefore the increase in the blood platelets is a certain indication of the recuperation of the organism. Before atonic bleeding and in cases of thrombosis there are no characteristic changes in the blood platelet count.

Next to the Fornio method of counting the blood platelets the author regards the Borot-Kaltstein method as the best.

TENESVÁRY (G)

## RESULTS IN 295 CASES IN WHICH THE CLASSICAL CAESAREAN SECTION WAS DONE

G up	T 1	P r p m		M t d th	F tal d ths	Cases 37 tal de ths
		At b u	F b u			
I Contract d p l as r B l o r e y l l ab	135	113	25		3	Cystic Norn bilid P ematury
L je in l lo Ati tw l e ho n l dng h t tel l hor	50	9	3	0	6	op b d d a sphyria t adher m phag Sept mia
3 Aft run l tin of p m tu elabor by bo g e balloo	24	16	3	0		
4 Aft l l m p u s t for p d l y	7	3	4			
II El p s nd o l h e l x e m u Ac le l l h m r h g (c n e l l)	4	7	3	1	5	
III Plac t p se via		16	6		3	
IV Oth co d itio bstru lung l bo E b d t m o r e O a n y l 3 V tral b t ion 4 R u d t e l a l e i s 5 h m p u s t l l t 6 Malp t t	3 3 3 4 4 4	3 3 7 1 1 1	0 0 1 0 0 0			
V Cra disease in the m ther 1 C d 3 P l m r y ( b o a c b h i l u s )	2 1	5 1	1 0	1		

from 10 to 20 c cm of anti streptococcus serum. The various groups of cases and the maternal and fetal mortality are shown in the table. The maternal mortality in the 295 cases was 1.3 per cent and the fetal mortality 8.5 per cent.

HARRY B. MATTHEWS, M.D.

Gosgrove S. A. Caesarean Section and Forceps When They Must Not Be Used. *J. Med. Soc. N. Jersey* 1928 xxv 776.

The author states that recent surveys of obstetrical operative mortality, especially that of caesarean section from several representative communities are appalling. He discusses the mechanism of labor, the forces which favor it, the resistances which retard it and the methods of artificial assistance and mechanical intervention. He emphasizes the importance of rigid observance of the indications and contra indications for caesarean section and the use of forceps.

In caesarean section the conditions essential for maximum safety of the mother are: (1) a good general condition, (2) absence of marked labor exhaustion, (3) integrity of the amniotic sac and (4) an uninjured and uninfected birth tract.

In the application of forceps full dilatation and retraction of the cervix are essential. The disproportion between the presenting part and the pelvic inlet must not be too great. The application of forceps to a head which is still wholly above the rim of the pelvis or only slightly moulded is unjustifiable. An exact knowledge of the condition to be dealt with is essential.

In expected dystocia careful pelvimetry and examination under anaesthesia if necessary should be done and roentgenograms should be made in order

to determine the cases in which an operative procedure is definitely indicated.

MAGNET P. LIND, M.D.

## PUERPERIUM AND ITS COMPLICATIONS

Vértes O. The Cessation of Menstruation During Lactation (Das Verhalten der Menstruation während der Lactation). *Zentralbl. f. Gynäk.* 1918 14, 1666.

The cessation of menstruation during the period of lactation is regarded by certain gynecologists as physiological and by others as pathological. As follicles begin to ripen again at the end of pregnancy the amenorrhoea which occurs in about 50 per cent of lactating women must be ascribed to changes in the uterus. Thorn believes that there is a progressive atrophy of the uterus up to the fourth month after delivery and that when menstruation recurs sooner even though the woman is nursing her child regularly and is therefore using her body fluid production exclusively in the formation of milk, the must be some pathological hyperaemic process in the region of the uterus. The author has confirmed the correctness of this theory by carefully taken histories.

Vértes believes that all women who menstruate during the period of lactation are suffering from an inflammatory process of the tubes and perimetrium although this condition may not be demonstrable by palpation. According to the degree of the inflammation and congestive hyperaemia the bleeding may be that of menorrhagia or metrorrhagia. The latter type of bleeding occurs when the chronic congestion leads to premature ripening of the follicles.

urography will indicate whether conservative surgery or nephrectomy should be done

After an operation on the urinary tract tests of kidney function made at intervals indicate better than any other procedure the progress of recovery  
JOHN P O'NEIL M D

**Lauber H J The Diagnostic Significance of the Ampullary Renal Pelvis** (Die diagnostische Bedeutung des ampullären Nierenbeckens) *Ztschr f urol Chir* 1928 xxv 93

After discussing the variations in the form of the normal renal pelvis as described by Hyrtl Hauch Papin and others the author reports the findings in fifty cases without renal disease in which pyelographic studies were made at the Kiel clinic He then discusses the question as to whether the so called ampullary renal pelvis is normal or due to obstruction of the urinary outflow

Hauch Papin and Batzy consider the ampullary form of renal pelvis to be normal but Voelcker says that as the first effect of urinary obstruction is dilatation of the renal pelvis it is pathological The author's findings support Voelcker's theory In two of seven cases studied by Lauber stone was proved to be the cause of the ampullary pelvis In three others bloody urine appearing periodically was regarded as evidence of renal stone which could not be demonstrated roentgenologically In two cases severe infection was associated with the dilatation of the renal pelvis In four cases the ureter could not be filled normally with contrast material Therefore of the seven cases four were certainly pathological and three were suggestive of renal stone

In the author's opinion the urinary stagnation is the cause and not the result of the ampullary renal pelvis and the latter is a beginning hydronephrosis  
JANSEN (2)

**Morison D M Routes of Absorption in Hydronephrosis** Experimentation with Dyes in the Totally Obstructed Ureter *Proc Roy Soc Med Lond* 1928 xvi 219

The author reports the findings made in experiments on the kidneys of rabbits in which injections of dye were made at various periods in the course of hydronephrosis As the amount of dye introduced was well within the pelvic capacity of the kidney the occurrence of positive pressure forcing the dye into abnormal channels was reduced to the minimum

Two groups of experiments were undertaken In the first group the dye was introduced at the outset of hydronephrosis and in the second group at varying periods in the course of an established hydronephrosis

The results indicate that in total hydronephrosis there are two routes of absorption from the renal pelvis the lymphatic and the tubular At the outset of complete ureteral obstruction an active lymphatic absorption from the walls of the renal pelvis and the ureter occurred during the first two or three days

After about the third day tubular absorption began and was more active than the lymphatic absorption When the dye was not introduced until the third day of the hydronephrosis there was rapid tubular absorption but no lymphatic absorption When the hydronephrosis had been present still longer the dye was drawn up the tubule system as far as the convoluted tubules The further absorption of the dye into the general system was not determined  
LOUIS GROSS M D

**Ferrer J C Obstruction to the Venous Circulation in the Kidney Caused by Distention of the Pelvis and Calyces with Special Reference to Pyelovenous Backflow** *J Urol* 1928 xx 701

From investigations of the effect of distention of the renal pelvis on the venous circulation of the kidney which were made on kidneys freshly obtained from human cadavers the author draws the following conclusions

1 Distention of the renal pelvis and calyces to their normal capacity will produce a distinct partial obstruction to the venous outflow

2 The obstruction is proportionate to the degree of the distention

3 Pyelovenous backflow is temporary and will persist until the pressure of the outflow overpowers it

4 Obstruction to the free outflow of the pelvis will produce passive renal congestion

5 Continuous distention of the renal pelvis may favor the development of hydronephrosis

6 An understanding of this obstruction will tend to stimulate investigations with regard to ureteral drainage and dilatation especially in pregnancy  
CLAUDE D PICARELL M D

**Billington W The Therapeutic Value of Nephropexy** *Brit M J* 19 8 11 975

The results of nephropexy must be judged from the success of the operation in permanently replacing the kidneys in their normal position without unfavorable sequelae such as pain in the loin or back hernia of the wound and persistent sinus and in curing or ameliorating the symptoms for which it was performed The most common causes of error in the diagnosis of surgical failure have been Reidel's lobe of the liver and enlargement of the gall bladder Hydronephrosis if already present at the time of the operation continues and usually necessitates nephrectomy later Unsuccessful results from nephropexy do not improve to any extent but any benefit from the operation is permanent

The author reviews 163 cases in which nephropexy was done One hundred and fifty of the patients were women The operation was successful in 77 cases (43.6 per cent) partially successful in 41 (25 per cent) and a failure in 57 (34.4 per cent)

In conclusion the author emphasizes the importance of treating nephropexy before the neurotic symptoms associated with the condition become fixed  
ELMER HESS M D

# GENITO-URINARY SURGERY

## ADRENAL KIDNEY AND URETER

Bothe A E Primary Extrarenal Hypernephroma  
*Ann Surg* 1928 LXXVIII 1028

Although hypernephroma usually originates in the kidney it may develop also in other organs. Embryological and pathological observations indicate that hypernephromata are polystructural tumors originating in adrenal rests.

The author reports a study of a primary extrarenal hypernephroma which was made to compare the histological structure of such neoplasms with that of renal hypernephromata. The patient a man seventy-seven years of age complained chiefly of nausea, epigastric pain and postprandial abdominal distention and discomfort relieved by eructation of gas. He stated that food and water seemed to stick on the way down.

Examination revealed slight distention of the abdomen and the presence of a smooth tense and slightly movable mass about the size of a grapefruit in the upper right quadrant. The mass was somewhat tender and moved with respiration. The peritoneal cavity contained free fluid. The gastro-intestinal roentgenogram showed multiple points of stasis (slight obstruction) in the small intestine. The pre-operative diagnosis was carcinoma of the upper abdomen of uncertain origin associated with chronic intestinal obstruction.

At laparotomy the tumor was found to arise from the soft tissues in the region of the right adrenal gland. There was no evidence of intestinal obstruction. The liver contained metastatic tumors. The patient died on the fifth day after the operation from bronchopneumonia.

In their embryonic state the anlage cells of the adrenal are so situated with respect to the liver, kidney, ovary, testicle, epididymis and uterus especially in embryos from 12 to 16 mm. in length that the possibility of adrenal cell inclusions in these organs can be readily understood. According to Broman adrenal rests have been found in the rete testis, epididymis and paradiidymis on the spermatic cord, in above and below the inguinal canal, in the ovaries on the fallopian tubes, in the retroperitoneal tissue below the poles of the kidneys along the spermatic and ovarian veins, in the shopsoas muscle at the brim of the pelvis, at the sacro iliac synchondrosis, in the renal capsule and kidney substance on the walls of neighboring vessels, in the renal and solar sympathetic plexuses between the transverse colon and the spleen, in the right lobe of the liver and in the pancreas.

Primary hypernephroma occurs most frequently in the kidney but may develop in any of the tissues in which adrenal rests have been found.

In the case reported by the author the predominating cells while presenting a slight variation in size and shape were of the large polygonal type consisting of a large nucleus surrounded by a clear vacuolated cytoplasm. Most of the nuclei stained deeply. Many mitotic figures were seen. The arrangement showed great diversity, being of the adrenal endothelial papillary alveolar and tubular types.

The predominating cells of hypernephromata are similar to those found in the normal adrenal cortex. The multistructural formations of the cells in hypernephromata are due to the plane in which the irregularly arranged capillary stroma is cut.

LOUIS NEUWELT M.D.

Muschat M The Physiology of the Milking Muscle of the Kidney *Am J Med Sc* 1928 LXXXV 831

Muschat states that the papillary muscle of the kidney is an anatomical and physiological entity with rhythmic contractions. When this muscle contracts it expresses the entire fluid content of the calyx, the pressure wave being transmitted to the papilla which it squeezes for a short interval. The spiral architecture of the muscle indicates that the impulse begins at the base of the papilla and travels around it to the mouth of the calyx. The milking effect probably causes a period of negative pressure in the calyx and also in the main ductus urinarius, the central duct of the papilla which sucks the urine out of the kidney substance. JACOB S. GAOZD M.D.

Bugbee H G The Role of Kidney Function in Urological Surgery *J Urol* 1928 XX 541

Kidney function is one of the most important factors to be considered in the management of urological surgical cases. In a symposium on tests of the blood and urine indicative of renal function at a recent meeting of the International Urological Society in Brussels it was generally agreed that determinations of the carbon dioxide combining power of the blood, of the creatinin, urea, uric acid and sugar contents of the blood, and of the elimination of phthalein during four fifteen minute periods are of great value.

The author reviews 171 cases of prostatic obstruction. The best results were obtained when the treatment was guided by the kidney function. When the risk is shown to be great a two-stage operation is indicated.

In surgery of the upper urinary tract not only the combined function of both kidneys but also the function of each kidney must be taken into consideration. These determinations in combination with the clinical observations and the findings of

the position of the patient so that the extent of the diverticulum and its orifice may be seen. After the bladder has been emptied they make a retention film.

In the treatment radical excision is regarded as the procedure of choice. For small diverticula the authors favor Young's intravesical suction technique but for large diverticula they prefer packing with gauze and extravesical removal. They emphasize that at the point where the diverticulum is removed it is important to close the bladder with good muscle tissue. The walls should be inverted and if necessary a ridge should be left. If the ureter is involved it should be transplanted. It should run above the mucous membrane for a distance.

In 43 cases operated upon there were 3 operative deaths a mortality of 7 per cent. Of 21 patients who were followed for from six months to fourteen years 12 showed marked improvement and 9 were completely relieved.

When there is no impairment of renal function the prognosis is favorable. If malignancy is found the prognosis must be guarded. If the obstruction is removed and the bladder wound closed with good muscle tissue the possibility of recurrence is slight. The radical operation has been fully justified by its results.

CLAUDE D. PICKRELL, M.D.

Aschner P. W. The Pathology of Vesical Neoplasms. *J. Am. U.* 11: 1928 xxi 1697.

To meet the need for a classification of the common varieties of vesical tumors which is in accord with the general principles of tumor terminology and will answer the requirements of the clinician the author suggests the following grouping which is based on the gross as well as the microscopic features of the neoplasms.

- 1 Papilloma. Benign. Cell uniformity and typism.
  - A Pedunculated. (1) single (2) multiple
  - B sessile. Papillomatosis
- 2 Papillary carcinoma.
  - A Non infiltrating. (1) scattered areas of some what atypical cells (2) more diffuse and more marked atypism.
  - B Infiltrating. (1) cells of benign type (rare) (2) cells anaplastic (a) stroma or stalk invasion (b) submucosal base invasion (c) muscularis and perivesical invasion
- 3 Non papillary (fat) carcinoma. (a) fibrocarcinoma (scirrhous) (b) medullary (c) adenocarcinoma (d) squamous and (e) hornifying

Aschner has reviewed the slides of every tumor subjected to biopsy or operation at the Mt. Sinai Hospital, New York, since 1911 and has diagnosed each in accordance with this classification. The clinical information regarding the cases and the fate results were obtained from the recent compilation of Beer and his associates. The 2 objects of this study were (1) an evaluation of biopsy for diagnosis and (2) an evaluation of the nature of the pathological condition for prognosis. The findings are summarized in a table. The following conclusions are drawn.

1 Reliable information as to the nature of bladder tumors is obtainable by cystoscopic biopsy in 97 per cent of cases. The failures occur in cases of multiple tumors and papillomatosis. In cases of malignancy the prognosis cannot be made from biopsy alone.

2 A biopsy diagnosis of malignancy in a case of tumor simulating a papilloma in its cystoscopic appearance and response to fulguration is an indication for more radical therapy (radium irradiation or surgery) unless the patient is debilitated.

3 Bladder tumors may be classified in a manner harmonious with general tumor terminology and with clinical terminology. They are benign or malignant.

4 Classification based on cell grading alone is not as practicable for clinical purposes. In the cases reviewed the prognosis on such a basis did not agree with the late results.

5 The presence or absence of infiltration appears to be a more reliable guide to the gravity of the condition.

6 The site of the malignant tumor determines its resectability and therefore materially influences the prognosis.

7 If a biopsy diagnosis of carcinoma is made and the case is considered surgical resection through the whole thickness of the bladder wall is the procedure of choice. Even in cases of pedunculated tumors incomplete resection has often been followed by recurrence. Stalk invasion and tumor cells in blood vessels at the base of the tumor cannot be detected by gross inspection. As only 29 of the 137 papillary carcinomata reviewed were not infiltrating it is probable that the non infiltrating types represent an earlier stage of the disease.

8 Before radical surgery of the bladder is undertaken a biopsy should be made since other lesions may resemble neoplasms very closely.

J. EDWIN LIMPAPATRICK, M.D.

Key E. The Operative Treatment of Large Defects in the Urethra. (Einige Worte über die operative Behandlung grosser Urethraldefekte). *Acta chirurg. Scand.* 1928 lxxi 545.

In a case of scrotal and perineal gangrene which had caused a large defect in the urethra the bladder was drained partly through a vesicular fistula and partly through a catheter which was passed through the posterior part of the urethra and brought out through the perineal wound. While the large wound was clearing up and the patient was being given treatment preliminary to an operation to cover the urethral defect an epithelial tube formed around the catheter leading out from the perineum. As direct suture of the two urethral ends was impossible and an operation by Ekehorn's method would have been very difficult on account of the patient's corpulence the urethral defect was covered by the newly formed epithelial tube around the catheter. The result was satisfactory and the method is recommended for similar cases.



Scholl A J Kidney Resection *Ann Surg* 1928 lxxviii 1045

Partial nephrectomy was done more often before the modern improvements were made in the technique of complete nephrectomy. It is associated with the danger of hemorrhage and the formation of urinary sinuses. Scholl and Judd have done partial resection in localized infections of the kidney with good end results. Scholl cites experiments performed by Tuffier, Bobroff, Hnman, Pearlmann and Kuras which show that life is possible when only a very small portion of normal kidney tissue remains.

MAURICE METZGER M D

Spitzer W M and Wallin I E Supernumerary Ectopic Ureters *Ann Surg* 1928 lxxviii 1053

This article reports a case in which an accessory body which secreted a fluid in no way resembling urine was found above each kidney. The fluid was drained by tubes which opened at the position of the para urethral duct on each side. In the walls of the bladder and vagina the tubes followed the course usually taken by Gaertner's canal which has long been recognized as the persistent remains of the mesonephric or Wolffian duct.

The authors emphasize the difference between supernumerary ectopic ureters and ectopic ureters that are not supernumerary. They agree with Furness, Herbst, Lofky and Kulbane that in cases of supernumerary ectopic ureters heminephrectomy is indicated.

LOUIS GROSS M D

Klein W O A Large Extravesical Stone Which Had Perforated (Extra vesical gelegener dur hge brochener grosser Ureterstein) *Ztsch f urol Chir* 1928 xxiv 538

Perforation of the ureter by a stone is relatively rare. As a rule the perforation is not recognized but in some cases it is revealed later by the passage of stones through fistulae from paranephric or perireticular abscesses. Up to 1911 only twelve cases were recorded in the literature.

The author reports the case of a man forty three years of age who had three attacks of renal colic due to stone. The third attack lasted for fourteen days. On abdominal and rectal palpation a hard resistant body the size of a nut was felt deep in the left side. Cystoscopy showed a tumor like bulging of the mucosa on the left side of the bladder. There was no excretion of indigocarmine from the left ureter but pus exuded from that orifice. Roentgenological examination after the introduction of air into the bladder showed a large oval stone in the small pelvis and another stone about half as large at the level of the second sacral vertebra. Both calculi appeared to be outside the bladder. Pyelography which was possible only on the right side showed a low kidney with a dilated pelvis and a kinked ureter.

At operation through a left lumbar incision a large pyonephrosis was found. This was opened and drained. A horizontal incision was then made above the symphysis and the bladder was opened. The

stone was felt behind the bladder wall and was removed transvesically from a bed of firm fibrous tissue. The other stone could not be palpated. Four weeks later the hydronephrotic sac and greatly thickened ureter were removed.

The author believes that the ureteral stone was impacted for some time and then ulcerated into the extravascular tissues through the paravesical portion of the ureter. The exact site of the other stone which could be seen in the roentgen picture but could not be palpated was not determined.

POSSNER (Z)

## BLADDER URETHRA AND PENIS

Lower W E and Higgins C C Diverticula of the Urinary Bladder with a Report of 110 Cases. *J Urol* 1928 xx 635

The structure of the walls of a diverticulum of the urinary bladder varies with the amount of inflammation present and the size of the diverticulum. The thickness of the walls may vary. The muscle may show distinct layers or may be replaced by fibrous tissue. In early diverticula the walls are usually thick and contain the various coats of the bladder. In large diverticula the walls are thin, the muscle fibers and mucosa being atrophic or absent.

Diverticula may occur in any part of the bladder but are most common near the ureters.

Some urologists believe that diverticula of the urinary bladder are of congenital origin and others that they are acquired. According to a third group they may be either congenital or acquired.

They usually occur after the age of fifty years when prostatic obstruction is most common but may develop at any age. The average age of the patients whose cases are reviewed by the authors was fifty six and eight tenths years.

The most common complications are infection, calculi and tumors. In 16 of the 110 cases reviewed by the authors stones were found in either the bladder or the diverticulum or in both. The stones may be single or multiple. The formation of stones is favored by stagnation and infection. Infection is usually present. It varies in its severity. Malignancy is not a common complication. In 4 of the cases reviewed there was a carcinoma of the bladder and in 1 case a carcinoma within the diverticulum.

The symptoms of diverticula of the urinary bladder are usually those of prostatic obstruction. Diverticula of moderate size may be symptomless until they become infected. If 2 or more attempts are necessary to empty the bladder and if the first urine voided is comparatively clear and the rest is foul a diverticulum may be suspected. Frequent burning, hematuria, difficulty in starting the stream and pyuria are common symptoms.

The diagnosis is made by cystoscopic examination or by cystography. The size of the diverticulum may be determined by making a cystogram with an 18 Fr catheter in the diverticulum. The authors make a cystogram after fluoroscopic observation during

at any part of the orifice can be seen clearly. The instrument may be rotated at different segments and will reveal lobules which previously required cystoscopic study. It is important to bear in mind that if the cautery blade is pushed home before the heat has reached the blade it may break.

After the operation a large indwelling catheter (No 24 F with two eyes) is inserted and the bladder is irrigated. When the irrigation is completed some of the fluid is allowed to remain in the bladder and the catheter is corked. In the post-operative care continuous drainage is necessary during the first few hours. In simple cases the catheter is removed after forty-eight hours. In cases with a large amount of residual urine and in those with a large obstruction the catheter is left in for a week.

Complications have been rare. Haemorrhage is decreased by the superficial burning and proper use of the catheter. The operation has never been followed by pronounced sloughing. Epididymitis has occurred in a small percentage of cases. Cauls has never seen incontinence of urine nor stricture of the urethra following the operation. In his 450 cases there was no operative death.

As a rule the patient is confined to the hospital for only about a week. JACON S GROVE, M.D.

**Lowsley O S. Surgery of the Prostate Gland with a Report of Operative Results.** *Proc Roy Soc Med Lond* 1928 xxi 35

Lowsley states that with the advent of sacral paracervical and nitrous oxide oxygen anaesthesia effective drainage of the bladder preliminary to the operation, the development of accurate kidney function tests, the perfection of methods for estimating retention products in the blood stream and the perineal type of operation, prostatectomy has become a relatively safe procedure.

When the patient with residual urine is first seen by Lowey the bladder is partly refilled after catheterization with boric acid solution or sterile water. The amount replaced can be gradually reduced if no toxic symptoms follow the procedure. This so-called decompression of the bladder prevents uraemia due to complete emptying of an over-distended bladder. Following the decompression a suprapubic cystostomy under local anaesthesia is done for drainage. Use is made of the suction apparatus devised by Kenyon which having a double suprapubic tube does not suck the bladder wall into the tube. The patient is vaccinated by the organisms in his bladder.

The period of preliminary drainage is continued until a succession of blood chemical and phenol sulphonephthalein tests show maximum renal efficiency and the patient feels well. In cases in which there has been considerable haemorrhage or infection a blood transfusion is given. A purgative is administered early on the day before the operation. Sodium bicarbonate is given in small doses for

two days before the operation. Fluids are given up to during and immediately after the operation to prevent dehydration.

The important features of an operation on the prostate are (1) proper preliminary drainage (2) the anaesthesia induced (3) the route by which the gland is removed.

Perfect local anaesthesia induced with 1 per cent procain by the sacral and parasacral method is possible in 95 per cent of cases. In the remaining 5 per cent some slight reinforcement is necessary. Local anaesthesia does not raise the blood pressure. Consequently the haemorrhage occurring during the operation is about one tenth the amount that occurs under general anaesthesia. Local anaesthesia eliminates postoperative pain for several hours and helps prevent surgical shock. Dehydration is prevented as water can be given throughout the operation.

The author prefers a modification of Young's perineal operation. His modified technique is described in detail. Postoperative drainage is established by a Pezzer catheter which is introduced into the bladder through the urethra and fixed by adhesive. The vesical orifice and prostatic cavity are thoroughly packed with sufficient vaseline gauze to arrest bleeding. The floor of the pelvis is closed by drawing the two sides of the levator ani muscle together with a catgut suture and the skin is closed with silk-worm gut. This procedure allows both the suprapubic and perineal wounds to close.

The postoperative care is very important. The patient should rest quietly in bed and be disturbed only for the administration of fluids and determinations of his blood pressure. The blood pressure is the most important single postoperative determination. It tends to rise about six hours after the operation. In none of the series of cases reviewed did it drop below 100 mm. In cases in which the blood pressure drops unduly and does not rise gum glucose solution is administered according to the method described by the author in 1921.

The packing is removed after forty-eight hours if the bleeding has stopped. The tube is removed from the bladder on the third day and the patient is permitted to sit up on the fourth day.

Two hundred and ninety-seven adenomatous prostates were operated upon by the method described with a mortality of 5.7 per cent. The average stay in the hospital was twenty-two and seventy-six hundredths days.

The after results are satisfactory in almost every patient who recovers from a perineal prostatectomy. Provided both sphincters are not lacerated beyond repair there is never a resulting incontinence. A persistent fistula is never formed if the perineum is reconstructed by drawing the two parts of the levator ani together. Frequently sexual intercourse is possible. The infected bladder usually clears up provided there is no residual urine.

In cases of carcinoma of the prostate producing residual urine the prostate is removed by the same method. As soon as the patient recovers from the

**Partsch and Breitlaender** The Roentgenological Demonstration of Stricture and Rupture of the Urethra (Die Darstellung der Harnroehre bei Strikturen und Rupturen in Roentgenbild) *Ztschr f urol Chir* 1928 xxv 108

Urethrography is a painless and safe procedure which should be used in all chronic changes and diseases of the urethra. All portions of the urethra should be examined by this method particularly in cases of stricture fistula false passages foreign bodies and diverticula. Roentgenological examination is more certain than bougie exploration and shows the position and extent of the disease process.

The urethra may be filled with iodipin or a barium sulphate mixture. Iodipin produces no untoward effect if it remains in the bladder for a considerable time. Sedimentation of the heavy metal salt may be prevented by adding a suspension of starch and boric acid. The starch suspension may be kept sterile. The mixture should be warmed in a water bath and shaken just before its injection.

The half lateral position with the use of the Bucky diaphragm is satisfactory for the examination. Visualization of the pars posterior in the sagittal direction seldom shows dilatation. **RAUSCHKE (Z)**

### GENITAL ORGANS

**Bumpus H C Jr and Thompson G J** Tuberculosis of the Genital Tract *Surg Gynec & Obst* 1928 lxxv 791

From their study of tuberculosis of the genital tract the authors draw the following conclusions:

1. Dysuria is a symptom of urinary tuberculosis and does not occur when the disease is confined to the genital tract.

2. The presence of the bacilli of tuberculosis in the urine indicates renal involvement.

3. Unless the urine is microscopically negative a cystoscopic examination should be made in all cases of chronic tuberculous epididymitis.

4. Satisfactory late results may be expected in more than 60 per cent of cases.

5. It may be expected that epididymectomy will be followed by involvement of the opposite epididymis in 30 per cent of cases.

6. Usually involvement of the opposite side will occur within one year of the epididymectomy.

7. There is a 7 per cent chance of the development of renal tuberculosis after operation.

8. Conservative treatment, epididymectomy and heliotherapy offers a better prognosis than more radical measures.

**Hinman F** The Surgical Treatment of Urogenital Tuberculosis *Surg Clin N Am* 1928 viii 1395

Hinman is of the opinion that in cases of unilateral renal tuberculosis associated with active genital lesions, nephrectomy should be practical.

He states that in both renal and genital tuberculosis tuberculosis of the bladder may remain the only active lesion after operation. When this is so

advanced as to cause pain frequently and incontinence temporary nephrostomy followed by later orchiectomy may give relief and prolong life.

There are two clinical types of genital tuberculosis: (1) that in which the more advanced or only lesion is in the epididymis and (2) that in which the seminal vesicles are involved with or without involvement of the epididymis. When genital tuberculosis is unassociated with active lesions elsewhere the indication is epididymectomy for Type 1 and the radical operation for Type 2.

In cases with active lesions elsewhere the indications for surgery depend upon the extent of the associated involvement as compared with the involvement of the genital or urinary organs.

After any type of operation the patient should be kept under observation for an extended period of time and all of the known chemical methods of treating tuberculosis should be used to supplement the surgical procedure. **J SYDNEY RITTER, MD**

**Caulk J R** The Author's Cautery Punch for Prostatic Obstruction *J Oklahoma Stat M* 1918 xii 317

Caulk states that since 1919 when he first devised his cautery punch he has been using it in an increasing number of cases until today he employs it in at least 40 per cent of cases of prostatic obstruction. As he has noted that after the punch operation the decrease in the size of the rest of the gland was out of proportion to the amount of tissue removed and as the histological structure of the specimen was identical with that of an adenoma he has become convinced that the majority of benign growths of the prostate are not neoplastic but represent a gradual evolution of inflammatory processes over a long period of time.

The selection of the types of cases which are suitable for the cautery punch operation is dependent entirely upon repeated cystoscopic studies of the vesical orifice under drainage. If under catheter drainage and splinting of the orifice hot applications and antiseptics the prostate begins to decrease in size if the cystoscopic appearance is not too gross that is if there are no large rounded intravesical lobes with deep clefts and if the intravesical growth shows recession the prospects of a successful result from the cautery punch operation are good. There is no question that this is applicable to the smaller obstructions.

Caulk reports seventy-five cautery punch operations performed on forty-three patients with large obstructions, some of whom were very poor risks for major surgery. Eighty-six per cent of this group were either completely relieved or were made comfortable. Some of the most gratifying results have been obtained in cases of carcinoma.

Caulk always prepares the patient by gradual decompression with catheter drainage. The operation requires thorough lamination with the cystoscopic appearance of the urethral orifice. It is done entirely under visual guidance. Obstruction

In the entire group of ninety four cases reviewed by the author there was a history of an attack of gonorrhea in only twenty seven and a history of a previous attack of epididymitis in twenty five. In some of the cases with previous epididymitis, the attack occurred during a gonorrheal infection. The author states that when a gonorrheal infection is superimposed upon a tuberculous infection the tuberculous infection may not be recognized at first. The only suggestion of its presence is the unusually prolonged course of the supposed acute gonorrheal epididymitis.

Tuberculosis of the epididymis is most common between the ages of twenty and forty, the period of greatest sexual activity. In the majority of cases its onset is slow and gradual. In thirty cases reviewed an abscess of the epididymis was found.

The most important aid in the diagnosis of tuberculosis of the urinary or genital tract is a history of previous attacks of tuberculosis in other organs. In seventy five of the cases reviewed either the physical or the X ray examination showed evidence of pulmonary tuberculosis and in fifteen cases there was evidence of extrapulmonary tuberculosis.

Another important aid in the diagnosis is the condition of the vas deferens. When there is no evidence of involvement of the vas deferens the diagnosis of tuberculosis of the epididymis should be made with caution.

Among the findings in favor of a diagnosis of tuberculosis of the epididymis is the presence of a single fistula or multiple fistula in the scrotum.

The value of rectal examination is negligible. Of seventy eight patients who were operated upon sixteen are known to be dead, fifty seven are living and five cannot be traced. There were no immediate deaths. The conditions responsible for the sixteen deaths in this group developed at varying periods after the patients left the hospital. The three most common causes of death were tuberculous meningitis, pulmonary tuberculosis and military tuberculosis. In eight fatal cases which were not operated upon the two most frequent causes of death were military tuberculosis and tuberculous meningitis.

GILBERT J. THOMAS, M.D.

Wesson M. B. Traumatic Orchitis. A Miscellaneous Journal, Jan. 1st 1928, 1:1857.

Wesson states that traumatic orchitis is extremely rare. When inflammation of the testicle occurs without concomitant prostatitis and seminal vesiculitis it is usually due to a blood borne infection such as mumps, typhoid fever, pneumonia or smallpox.

In cases of tuberculous epididymitis following trauma, medicolegal boards must decide whether the injury caused a traumatic exacerbation of a pre-existing lesion or the lowered resistance of the damaged site favored the migration of organisms to that point. European boards attribute the major part of the disability to the pre-existing disease and the remainder to the injury. The possibility of localized tuberculous foci following severe trauma

has been proved experimentally and if an exacerbation of an already present testicular or epididymal tuberculosis occurs immediately after an injury it may be attributed to the trauma.

Delorme reported that he never saw a case of traumatic orchitis in the Prussian army or cavalry without associated gonorrhea or a latent tuberculosis. Of seventy cases of traumatic orchitis studied by the author, only three could be attributed to trauma.

BENJAMIN F. ROLLER, M.D.

Stevens A. R. and Ewing J. Adenocarcinoma of the Testis in the Adult. Ann. Surg. 1928, LXXVIII, 1074.

The authors report an adenocarcinoma of the testis in a man fifty one years old which differed from embryonal tumors in the time of life at which it developed, its slow course, the absence of metastases after a long period in spite of a partial operation, its gross anatomy which showed it to be a peculiar multicystic neoplasm arising well within the body of the testis and replacing the gland tissue instead of displacing it and its structure which showed small cubical cells covering very numerous papillary projections of stroma and growing in diffuse or slightly alveolar form.

They conclude that the tumor is not to be classed with the ordinary embryonal tumors of teratomatous origin but was an adult anaplastic growth probably derived from the adult tubule cells. They have never seen a tumor of exactly this type before.

They state that there are two varieties of malignant carcinomata of the testis. The great majority are embryonal carcinomata of teratoid origin which tend to appear before the fortieth year of age, metastasize freely by both the blood and the lymph stream and are very radiosensitive. Those of the other type are rare, appear usually after the fortieth year of age, grow slowly, metastasize less rapidly, are probably somewhat radiosensitive and probably have a better prognosis.

Many of the slowly growing tumors of the adult type should be recognized from the clinical data and many more if not all from their gross anatomical and their histological characteristics. It still remains to be determined how numerous these tumors are and whether there are other variants of the series of adult adenocarcinomata which can be separated from the embryonal carcinomata.

LOUIS CROSS, M.D.

Ketley J. E. and Hueper W. C. Carcinoma of the Testicle. Ann. Surg. 1928, LXXVIII, 1079.

Tumors of the testicle are relatively rare and the great majority are malignant. Benign growths are so rare that they are of little clinical importance. Carcinoma of the testicle is much more frequent than sarcoma. Up to the present time more than 700 carcinomata of the testicle have been reported. Arranged in decreasing order of frequency the various testicular tumors are carcinomata, teratoids, teratomata, sarcomata and benign tumors.

immediate effects of the operation radium irradiation is administered to the prostatic bed. The patient usually has no recurrence at the site of the prostate and lives for from two and one half to three and one half years. Death results ultimately from metastasis.

In 33 cases of carcinoma of the prostate operated upon the mortality was 10 per cent. Almost 10 per cent of the entire series of prostates operated upon were carcinomatous.

In 40 cases of prostatic abscess operated upon by the perineal route under regional anesthesia the average postoperative stay in the hospital was ten and eighty three hundredths days. There were 2 cases of epididymitis and 1 case of septicæmia. None of the patients died. J EDWIN KIRKPATRICK M.D.

Rolnick, H. C. The Pathology of Epididymitis. *Surg. Gynec. & Obst.* 1928 XLVI 806

Rolnick has found that it is not possible to produce a chemical epididymitis. He states that acute epididymitis at its onset is an interstitial and peritubular and not an intratubular inflammation of the tail as well as of the body and head of the epididymis. The extension of the infection from the tail occurs by way of the peritubular and interstitial tissues and not by way of the intratubular tissues.

Epididymotomy should be limited to the tail of the epididymis without incision of the tunica vaginalis. The purpose of the incision is to relieve the tension and provide free drainage from the interstitial tissues. The operation should be performed early to prevent permanent damage to the epididymis. J. SIDNEY RUTEN M.D.

Lindgren E. Septic Epididymitis with Special Regard to the Forms with a Chronic Course (Zur Kenntnis der septischen Epididymiten mit besonderer Berücksichtigung der chronisch verlaufenden Formen). *Ztschr. f. urol. Chir.* 1928 XXV 127

Lindgren discusses cases of chronic epididymitis which clinically suggested tuberculous and were operated upon for the latter condition but in which microscopic examination showed only a chronic non-tuberculous inflammation. He does not discuss epididymitis due to instrumental treatment of the urethra, prostate, etc. In 65 per cent of the cases the condition was bilateral. This septic form of epididymitis occurs more frequently than was formerly supposed. According to Kocher we must differentiate between traumatic epididymitis, urethral epididymitis with infection of the urinary passages, and metastatic epididymitis.

Traumatic epididymitis is attributed by some to a powerful force and by others to a weak force. Trauma does not produce the infection but favors it. In the author's twelve cases the external force did not produce a demonstrable external injury. Trauma evidently causes slight tissue abrasions favoring the invasion of bacteria from the posterior urethra. Urethral epididymitis is the most common form. It frequently appears after gonorrhea. According

to Kappis the bacteria almost always invade the epididymis from the posterior urethra and the prostate. The infection probably travels by way of the vas deferens in which antiperistaltic movements have been demonstrated.

Metastatic epididymitis is less common. It occurs in association with septic conditions and other diseases. The infection probably reaches the prostate and seminal vesicles by way of the blood stream and travels to the epididymis and vas deferens from there. In six of the author's cases the condition followed bronchitis.

While thirty two of the author's cases of epididymitis could be grouped in these three classes there were fourteen in which the etiology was less clear although the condition was probably of a septic nature.

In cystic epididymitis there is nearly always an acute stage with pain and swelling. When the involvement is bilateral one epididymis becomes affected after the other. The appearance of the patient suggests tuberculosis but the temperature is usually normal or only slightly increased and frequently there are chills which do not occur in tuberculosis. The enlargement of the epididymis is nodular as in tuberculosis and the spermatic cord is either free or uniformly swollen and tender. Septic epididymitis leads less frequently to abscess or fistula formation. Occasionally there is a slight symptomatic hydrocele. The urine is often cloudy and on culture yields a bacterial growth. Among the bacterial excitants of epididymitis are the bacillus coli, staphylococci and streptococci.

The prognosis as regards function is doubtful. The vas deferens often becomes occluded as the result of the fibrous change but restoration to normal may also occur.

The treatment is usually conservative consisting in the application of hot moist compresses, rest in bed and elevation of the scrotum. The mercury lamp, hot sitz baths and diathermy have also proved of value. The injection of antiseptics into the epididymis and vas deferens is contraindicated. Possibly especially in recurrence epididymectomy may be advisable but extirpation of the testicle is rarely to be considered. While some surgeons advocate biopsy before a major operation is performed Wildbolz believes that it is better to remove an epididymis with ordinary septic inflammation than to leave behind a tuberculous process from which the infection may become further disseminated.

The article contains a large number of case histories. JANS EN (2)

Kretschmer H. L. Tuberculosis of the Epididymis. A Critical Review Based on the Study of Ninety Four Cases. *Surg. Gynec. & Obst.* 1928 XLVI 62

Tuberculosis of the epididymis may be confused with syphilis but of forty five cases in which Wassermann tests were made only five had a positive reaction and in these five the nature of the condition was revealed by histological examination.

The patient now has partial urinary control during the day and complete control at night. The author believes that ultimately he will have complete control at all times.

ELMER HESS M.D.

### MISCELLANEOUS

Redewill F. H. The Physiology of Micturition  
*J Am M Ass* 1928 xci 1960

The author first describes his portable automatic operated apparatus the cystometer which is of value for the determination of (1) the point at which desire to void is first noted (2) the capacity of the bladder (3) the emptying pressure (4) the tonicity of the bladder wall and (5) the characteristics of various conditions of the bladder (obstruction diverticula tumors and neurogenic bladder).

In discussing the physiology of micturition Redewill states that the trigon muscle is a separate entity of unstriated muscle arising from the longitudinal layer of the ureters. Some of the muscle fibers extend down even below the verumontanum. The internal and external sphincters of the bladder are surgical entities. The internal sphincter consists of the trigon whereas the external sphincter is an extension of the outer and inner muscle fibers from the bladder musculature. The external sphincter is composed of striated fibers which begin at the vesical orifice and extend back to the rectum becoming the recto urethralis muscle. Anterior fibers of the levator ani and striated muscle known as the levator prostatae bands are attached to the prostatic sheath. These sets of muscles are controlled by the sympathetic and parasympathetic nerves.

MAURICE MELTZER M.D.

Soloway H. M. Extravasation of Urine  
*J Urol* 1928 xx 569

The author reviews eighty three cases of extravasation of urine which were treated in the period from 1917 to 1925. Cases due to rupture of the bladder ureter or kidney are not included. In over 80 per cent of the cases the cause was a stricture of the bulbous or bulbomembranous urethra and in nearly every instance the stricture was accompanied by a perineurethral abscess.

An important factor in the prognosis of the condition is the physical state of the urine at the time of the extravasation. Septic urine is very destructive to the tissues causing rapid inflammatory edema and necrosis soon followed by sloughing.

The symptoms of extravasation of urine depend upon the location of the rupture, the duration of the decomposition of urine in the subcutaneous planes of fat and fascia and the virulence of the invading organisms. The prognosis is always grave and depends to a great extent upon the duration of the extravasation. The best results are obtained when treatment is given early. The treatment is surgical. Lejars says "Waste no time in making superficial inadequate incisions in the most edematous areas go to the penneum at once."

The author draws the following conclusions:

1 Extravasation of urine is an emergency condition demanding immediate surgical treatment.

2 In the majority of cases the cause is a stricture of the urethra and as a rule this is accompanied by a perineurethral abscess.

3 In extravasation of urine without obstruction to the urinary outflow the anaerobic organisms play a very important rôle.

4 The relationship between the point of rupture of the urethra and the fascial planes of the perineum determines the course of the extravasated urine.

5 The most common site of rupture is the bulbous urethra and the next most common site the membranous urethra. Rupture of the prostatic urethra is rare.

6 The best results are obtained by radically opening the focus of infiltration by wide incisions and rectifying the stricture. Both of these procedures should be done at the same time.

8 Extravasation of urine must be differentiated from streptococcal gangrene of the scrotum and penis and from idiopathic gangrene of the scrotum.

9 The operation for extravasation of urine may be done under spinal anesthesia.

10 The prognosis depends upon the stage of the condition in which operation is performed.

JOHN P. O'NEIL M.D.

Kelsted K. and Schledt E. The Treatment of Infection of the Urinary Tract  
*Acta med Scand* 1928 lxx 268

The authors review the forms and results of acidosis therapy recorded in the literature and report the results of the use of calcium or ammonium chloride with hexamethylenetetramin or salol in seventy cases of acidosis. A cure was obtained in twelve. The reasons for the failure of the treatment in the other cases are discussed.

Rosenstein P. Primary Suture in Urological Operations. Also a Contribution on Cystostomy (Ueber primäre Naht bei urologischen Operationen. Zugleich ein Beitrag zur Cystostomie).  
*Ztschr f urol Chir* 1928 xxv 248

Rosenstein does not agree with surgeons who view primary suture of the skin wound after opening of the hollow viscera of the urinary tract with skepticism and prefer to place a drain even if for only a short time through the covering layers of the other wise closed wound at the site of the suture in the viscus. He favors primary suture of the wound provided it is not contra indicated by infection, bleeding, a persisting wound cavity with stasis of secretion or obstruction to the normal escape of urine.

The pelvis of the kidney has a pronounced tendency to close after pyelotomy even when it is only lightly sutured especially when the opening is on the anterior surface and the urine can therefore escape in a posterior trough directly into the ureter. If it is desired to avoid drainage the suture of the

In the etiology of carcinoma of the testicle heredity is of little if any importance. Sexual activity may be a factor as the tumor develops during the period of greatest sexual vigor. Previous inflammation of the testicle from tuberculous gonorrhea or syphilis is of no importance in the etiology. It is still doubtful whether trauma is a contributory factor. Malignancy is found most frequently in undescended testicles especially those in the inguinal region. The affected testicle is often congenitally larger or smaller than the other one. Carcinoma usually starts in the rete testis where the upper part of the epididymis joins the testicle.

Grossly, testicular carcinomata may be divided into solid and cystic growths. Those of the solid type are usually soft and rarely firm in consistency. The testicle with a solid carcinoma usually preserves its normal shape but is enlarged and occasionally presents a nodular surface. Carcinomata of the cystic type resemble cystic teratomata but involve also the epididymis which in teratoma of the testicle remains free.

According to their histological structure carcinomata of the testicle may be grouped as follows: (1) seminoma, spermatocytoma or embryonal carcinoma, (2) adenocarcinoma with its papillary and gelatinous variety, (3) squamous celled carcinoma with and without cornifications and basal celled carcinoma, (4) neuro epithelioma, (5) chorio-epithelioma, and (6) carcinosarcoma.

Carcinoma of the testicle metastasizes very early and extensively by way of the lymphatics and blood vessels. Secondary growths occur in the lungs, liver, brain and kidney and in about the ureter in the bladder in the perivascular tissue from the inguinal canal up to the renal hilum and often in the inferior vena cava and right heart. Very small testicular tumors may produce enormous retroperitoneal metastases.

In the early stages of carcinoma of the testicle before metastasis occurs there are practically no subjective symptoms. Fewer than a third of the patients complain of a dull dragging pain in the testicle which at first increases slowly and then rapidly. The growth is smooth and moderately firm to the touch. The symptoms produced by metastases depend upon the location of the metastases. Cachexia, loss of weight and weakness soon develop.

The diagnosis can be made if the possibility of malignancy is borne in mind in the examination of abnormalities of the testicle. In doubtful cases immediate exploration is indicated.

The prognosis is not favorable. In various series of cases the incidence of cure has ranged from 5 to 50 per cent. Rice states that the average survival after operation is eight and thirty five hundredths months.

Early operation offers the only hope. The author advises removal of the inguinal testicle as a prophylactic measure because of the frequency of carcinoma in the inguinal region and because undescended testicles are nearly always aspermatic. Some sur-

geons recommend pre operative X ray treatment of the growth and postoperative X ray treatment of the abdominal glands. MAURICE MELTZER, M.D.

Cecil A. B. The Treatment of a Case of Male Hypospadias. *Surg Clin N Am* 1928 v. 23:42

Cecil reports the case of a child who was born without a scrotum and with the penis curved downward and held to the perineum by a strong fibrous band. Urination occurred through an opening in the perineum.

At the first operation the fibrous band was divided to permit the penis to assume the normal position. Nine years later the child was circumcised and the foreskin was opened and sutured over a catheter inserted under the skin of the penis to form an anterior urethra.

At a third operation a hexagonal flap of skin was removed from the inner aspect of the thigh and introduced beneath the skin of the penile portion. This flap became absorbed.

At a fourth operation performed when the child was twelve years old the foreskin penile tube was connected by a graft to a point just anterior to the hypospadiac opening in the perineum. The Ragoev skin flap technique was used.

At a fifth operation, suprapubic drainage was established and the deep urethra was connected with the reconstructed penile urethra. Two months later the child voided normally. ELMER HESS, M.D.

Cecil A. B. The Treatment of a Case of Male Epispadias. *Surg Clin N Am* 1928 viii, 23:47

In the case reported the pubic bones were joined by a fibrous band and the thighs were rotated outward. At the root of the penis there was an opening the size of the little finger from which urine constantly dribbled. The penis was retracted and turned sharply upon the lower abdominal wall. The urethral canal was entirely open and the foreskin was markedly redundant. The testes and scrotum were normal.

At the first operation performed through a rectus incision the bladder was found to be the size of a walnut. The internal vesical sphincter was denuded and sewed together and a suprapubic tube placed in the bladder.

At a second operation the bladder neck was completely freed the suprapubic opening extended downward under the fibrous band which held the pubic bones together and a small V shaped portion was removed from the anterior aspect of the neck of the bladder. The vesical neck was then brought tightly over a No. 12 catheter and the closure continued upward toward the ventral surface of the bladder culminating in the fixation of a suprapubic tube. After healing the patient had a fair amount of control.

At a third operation a suprapubic tube was again introduced and the urethra denuded and overgrown. The superficial tissues of the penis were then over sewn with interrupted sutures of silk. The operation was followed by edema of the penis.

# SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

## CONDITIONS OF THE BONES JOINTS MUSCLES TENDONS ETC

Wall J C The Development of Bone (A) The Process of Development in Bones of Different Types (B) Normal Physiological Calcification of the Matrix in Cartilage and in Bone (C) The Problem of the Manner of Deposition of the Calcium Salts *Irish Surg* 1928 VII 1017

The deposition of calcium in the normal development of bone is a function of living cells. It is in contrast to the process following pathological lesions in which the deposits are the result of the physical precipitation of calcium in the dead or injured tissues.

The first sign of ossification in normal embryo is enlargement of the cartilage cells at the ends of long bones and their arrangement into columns. The next stage is the formation of groups of cells between which there is formed a substantial branching trabecular network which later becomes the most heavily calcified area. The matrix between the cells first stains more deeply and then the beginning of calcification can be seen in the form of small granules which appear around the periphery of the lacunae of the cartilage cells and gradually increase until the matrix becomes a solid mass.

Calcification of the epiphyses begins in the center. The process is the same as that found in the short irregular bones. There is first an increase in vascularization and in the amount of matrix between the cells. The cells then group themselves into clusters and around the periphery of each cell small granules are deposited. The deposit takes place first around the cells nearest the blood vessels. The blood vessels do not penetrate the central part of the cartilage until it begins to calcify. They enter the calcified mass by erosion and the true ossification proceeds along the vessels. Flat bones such as those of the skull may calcify without the presence of blood vessels in the cartilage in other respects they develop in the same way as other parts of the skeleton.

Membrane bones are produced by layers of cells on the surface of the fibrous sheets which serve as a framework. The calcification proceeds from the surface to the center of the sheet. The bone forming cells exude the calcium salts into the matrix where they precipitate giving the bone its hardness.

In all cases of calcification of cartilage observed by the author it was noted that calcium appeared first in the form of granules the granules were embedded in the matrix immediately outside the cell capsule. The calcium salts appeared before blood vessels were present in the calcified area and the calcium salts did not appear until the cartilage cells had become enlarged and grouped.

Wells has shown that 85 per cent of the calcium in bone is in the form of phosphate and 15 per cent in the form of carbonate. Bergheim's experiments showed that in rachitic rats calcium and phosphorus are both lost in the faeces whereas in normal rats these elements are absorbed. Other experiments have shown that all tissues which utilize phosphates possess a ferment called phosphatase which will produce inorganic phosphates from organic phosphoric esters. Eden found large amounts of calcium in the callus of healing fractures before any callus was visible in the roentgenogram. It was evident in a form bound to protein. Injections of calcium salts into the site of a fracture have been known to hasten healing.

The formation of clam shells and egg shells is another evidence of the secretive power of the living cell in the production of calcification. The shell of birds' eggs is composed almost entirely of calcium and is secreted by the shell gland a modified part of the genital tract. This secretion is an undeniable cellular activity causing calcification. In experiments on young mice in which he injected a blue dye and subsequently examined the developing teeth Blotvogel found the dye not only in the cells before the dentine and enamel were formed but also in the calcified tooth. The influence of some of the ductless glands on bone formation notably in acromegaly and cretinism is further evidence that bone growth or calcification is an activity of the living cell rather than a physical precipitation.

Calcium is secreted to form hard structures by six types of cells—three epithelial cells and three connective tissue cells. The epithelial cells are (1) the ameloblast which builds the enamel of the teeth (2) the epithelium of the mantle of the clam and (3) the epithelium of the bird's shell gland. The connective tissue cells are (1) the odontoblast which builds dentine in the teeth (2) the cartilage cell and (3) the osteoblast and bone corpuscle.

WILLIAM A CLARK M.D

Axhausen G. Anaemic Infarcts in the Osseous System and Their Significance with Regard to the Theory of Primary Epiphyseal Necroses (Ueber anaemische Infarkte am Knochensystem und ihre Bedeutung fuer die Lehre von den primären Epiphyseonekrosen) *Irish J Clin Chir* 1928 cli 72

Axhausen attempts to explain a series of heretofore unexplained joint diseases by the development of primary epiphyseal necroses. The anatomico-genetic explanation of such primary necroses of the epiphyses has recently been supported also by the observations of others. Their etiological significance however is still disputed. Axhausen's theory that



pyelotomy wound should be carried out with particular care to prevent the escape of urine into the tissues. After completion of the suture the author usually pours a 1:500 solution of rivinol into the wound to destroy any bacteria that may have penetrated into the tissues from the renal pelvis.

Under the conditions mentioned the author prefers primary suture also after ureterotomy provided the stone was located high enough for the field of operation to be visible, if the ureter can be closed without tension and if the suture can be covered by a flap of fat.

Rosenstein is decidedly in favor of primary suture after suprapubic section even when the urine has been quite catarrhal. As the adjacent tissues must be protected against the escape of urine he usually fastens the bladder somewhat below the intended incision to the symphysis or the rectus muscle with three catgut sutures in such a way that by this procedure which he calls cystopexy the space of Retzius is protected against infection.

He does primary suturing also in nephrectomy without regard to the stump of the ureter if the wound is not soiled and as a routine procedure in nephropexy.

Closure of the abdominal wound best assures the firmness of the suture of the hollow viscus. As proof of this fact the author discusses suture of the bladder. Drainage over the closed bladder is usually removed after several days when as the result of absorption of the catgut the danger of insufficiency of the sutures is greatest. At the same time the retention catheter is usually removed so that the suture line in the bladder is placed under greater strain. As a result a fistula frequently develops. The author therefore avoids all drainage after suprapubic cystotomy and on the first and second days after the operation irrigates the bladder with small amounts of fluid.

In conclusion Rosenstein reports a number of case histories in support of his views.

J. A. SORENSEN

cat. In the former the weight bearing portion of the joint becomes involved early, whereas in the tuberculous process the granulation tissue is kept out of the weight bearing portion of the joint by the contact and pressure of the opposing surfaces.

Complete restoration is rare as fibrous ankylosis often occurs or if the articular cartilages are completely destroyed bony ankylosis results. The author states that the Willem's treatment is hardly practical for civil life. For the purulent form of arthritis he advises early drainage, rest and weight extension. He emphasizes that for drainage and preservation of the anatomy of the part the incision should be placed in the most dependent position.

The treatment of the sequelae should consist in the prevention of joint contractures and active use of the parts after subsidence of the inflammatory process. Baking, massage, diathermy and passive motion are rarely of much benefit and forcible manipulation under anesthesia may activate a quiescent infection. Osteotomy and arthroplasty are extremely valuable procedures but should not be attempted until months or years after the inflammatory process has subsided. PAUL C. COLONNA, M.D.

**PAYR E. Chronic Infectious Arthritis and Its Surgical Treatment. Injection Procedures. Synovectomy Etc.** (Ueber die chronische Infekt. Arthritis und ihre chirurgische Behandlung. Einspritzungsverfahren, Synovectomie usw.) *Ztschr. f. klin. Med.* 1928 cviii 4

PAYR applies the term infectious arthritis to all bacterial toxic conditions of joints with the exception of infectious granulation tumors and to the end results of acute inflammations. An exact differentiation of these conditions is difficult. They are related to chronic articular rheumatism (polyarthritis) and possibly also to the peri-arthritis destruens of Umber which is considered to be an endocrine condition. Combinations of arthroses with infectious arthritis are possible. In all advanced cases a secondary arthritis deformans develops from the infectious arthritis. Because of these facts the etiology is difficult to determine.

Infectious arthritis may be monarticular or polyarticular. It is of two types: a hypertrophic (moist) type and an adhesive contracting (dry) type. In the former two varieties may be differentiated one with a considerable often recurring exudate and the other with less exudate but with marked thickening of the synovial membrane. The changes affect chiefly the synovial membrane and the sub-synovial connective tissue. The active stage is characterized first by hemorrhages, nests of bacteria, and infiltration and later by the formation of necrotic and granulation areas in a pronounced focal form. The cartilage and bony joint bodies remain fairly intact for a long time but may fuse in ankylosis secondarily. In the dry type of infectious arthritis the characteristic changes leading to secondary arthritis deformans are a narrowing of the capsular space due to cicatricial contraction

welding of the gliding surfaces by a pannus developing between the cartilaginous erosions and the formation of intra-articular adhesions and peri-articular indurations. Contractures rarely fail to occur in either form of the condition. The knee and hip are affected most often and then with rapidly decreasing frequency the elbow, shoulder and tibio-tarsal joint. Frequently the involvement is bilateral.

To establish the diagnosis histological, bacteriological and serological examinations are essential. When tuberculosis is suspected animal inoculation is necessary. In all doubtful cases in which no fluid is obtainable on puncture particularly those of the adhesive contracting type biopsy excision of the synovial membrane should be done.

The temperature of the skin is somewhat increased over the joint. In most cases with a tendency toward ankylosis the blood picture shows a considerable lymphocytosis. Stimulation therapy and diagnostic procedures such as squeezing out of the tonsils, probing of dental fistulae, gynecological examinations and massage of the prostate are followed by a local reaction.

The roentgenogram shows spotty atrophy, cyst formation, thickening, peripheral proliferations, ossification of the capsule and ligaments, calcareous foci and intensification of the shadows of the capsule due to the deposit of iron pigment. Inflation of the joint with oxygen may reveal evidence of changes in the capsular space.

The surgical treatment includes minor and major interventions. Among the former are:

1. Extirpation of the primary focus of infection. After this has been done the author waits for a period of from six to eight weeks before beginning energetic local treatment of the joint.
  2. Pain relieving treatment of the joint capsule and cavity such as aspiration, anesthetization and filling of the joint cavity with an antiseptic (phenol camphor).
  3. The production of an artificial hydrops in the dry form of the condition and measures for redistention of the contracted capsular tube.
  4. The combating of rigidity (hypertonia) of the muscles by hyperemia, massage and anesthesia.
  5. Gradual and careful elimination of the contractures by the use of apparatus, extension, etc.
  6. Hydrotherapy, care of the muscles and mechanotherapy.
  7. The use of splinting apparatus.
  8. Active movement in sports, etc.
- The major surgical interventions include (1) synovectomy and possibly the formation of a capsular window, (2) joint plastics, (3) osteotomy, (4) arthrodesis and (5) the removal of small, very severely injured portions of the extremity. The chief requisite of the entire plan of treatment is relief of pain.

In discussing the indications for the various types of treatment PAYR states that in the very large number of cases of infectious arthritis seen by him

the epiphyseal necroses represent anemic infarcts is generally rejected.

As evidence in support of his theory Axhausen presents in detail the autopsy findings in a case in which fresh anemic infarcts were discovered at various sites in the skeleton (epiphyses and metaphyses) of a man of forty six years who died of cirrhosis of the liver.

The macroscopic and microscopic findings in the pathological bone foci are shown in illustrations and described in detail. The fresh sharply circumscribed necroses of the bone and marrow were subchondral and at the epiphyses were more or less wedge shaped. Histologically the bone within the foci was dead. At the border toward the living bone the dead marrow was a homogeneous mass. This explained the light bordering strips in the macroscopic picture and the delicate thickening in the microscopic picture. In the area of thickening an extravasation of red blood cells was noted but no leucocytes were seen. The blood vessels in the area of the foci were filled to the point of bursting. Upon this hyperemia and perhaps also upon the diffused blood pigments, depended the macroscopically noticeable red areola which completely surrounded the dead areas. At the periphery of the dead areas, signs of reparative activity were visible—connective tissue substitution of the dead marrow and beginning bony metabolism. The bacteriological examination of the bone foci showed a short non hemolytic streptococcus.

From the multiplicity and the localization of the foci in areas in which embolic infected necroses occur most frequently and from the wedge shape of the foci the author concluded that the etiological factor was an embolic or embolic thrombotic occlusion of the arteries but in the sections no evidence of occlusion of the vessels was demonstrable. As the infectious element remained ineffective (there was nothing in the histological picture to show growth of the bacteria) the foci in the bone are to be characterized as typical anemic infarcts.

The author reports also the case of a man forty one year of age with osteochondritis dissecans of the knee in the diseased portion of the subchondrally situated epiphyseal area which otherwise consisted of living bone evidently formed by metabolic activity and transformed into mucoid connective tissue mass.

In addition he reports three cases of dry osteomyelitis which healed spontaneously. The infectious exsiccants either did not enter the focus at all or their growth was stopped or markedly inhibited by the immune substances of the body.

Numerous comparisons with the findings of other investigator and arguments in support of Axhausen's theory are given which cannot be included in an abstract. Besides the facts proving the occurrence of anemic infarcts in epiphyseal and metaphyseal bones view are given regarding the development of other diseases of the bones which are believed to be related to anemic infarcts and their sequelae.

Block (Z)

Beckman T. and Ivarsson G. So Called Chondromatosis of Joint Capsules (Ueber sogenannte Chondromatose der Gelenkkapseln). *Acta chirurg. Scand.* 1928 LIII 551.

The authors report a case of chondromata in the capsules of both knee joints in a woman fifty years of age. In one knee they resected the suprapatella bursa in which most of the chondromata had developed and full function was restored to the joint.

Pathological study of the case showed that the chondromata were exactly like the chondromata of joint capsules first described by Reichel but did not support the hypothesis that they are true tumors.

The chondromatosis is to be differentiated from arthritis deformans by the well marked tendency in the former condition of the synovial membrane to form cartilage and bone and by the clinical picture.

Phemister D. B. The Pathology and Treatment of Pyogenic Arthritis. *Pennsylvania M. J.* 1933 XXXI 51.

Phemister states that the most important organisms found in pyogenic arthritis are the staphylococcus hemolytic streptococcus and gonococcus. He points out that there is very little difference in the bacteriological findings in the atrophic and hypertrophic forms of arthritis. In both the organisms most constantly present is the streptococcus viridans.

The pathological changes in acute pyogenic arthritis vary according to the virulence of the causative organism and its mode of entrance into the joint. The exudate may be serous seropurulent or purulent. Acute serous arthritis is usually due to a blood stream infection. In this condition the changes primarily affect the soft parts but occasionally there is erosion of the articular cartilage with resulting ankylosis. As a rule this type of arthritis subsides spontaneously under treatment by rest in bed immobilization and traction. All foci of infection should be eradicated. Frequently the marked joint effusion calls for aspiration.

The seropurulent type of arthritis may be of hematogenous origin but as it is often a direct extension from osteomyelitis the synovia is considerably damaged and subsequent impairment of the joint function may result. This type is frequently a forerunner of the purulent form. The treatment indicated is similar to that of the serous arthritis but if the fluid continues to be found cloudy on aspiration drainage of the joint should not be delayed.

The purulent type of arthritis produces changes in the entire joint. There may be erosion of only one side of the joint but usually both surfaces are involved. The presence of a dense area of bone showing a greater density than that of the rest of the bone bordering on the joint and possessing an articular cortex which is intact is almost pathognomonic evidence of a joint sequestrum. Occasionally though rarely there is a primary pyogenic infection of the epiphysis.

The articular changes seen in acute pyogenic arthritis and tuberculous arthritis are strikingly different.

for low back pain viz abnormalities of development While these abnormalities in themselves cause no symptoms they render the region in which they occur potentially weak and particularly susceptible to strain or trauma The abnormalities described by the author include spina bifida abnormalities of the bodies and transverse processes of the vertebrae non union sacralization and calcification of the lumbal ligaments

Cole discusses also the relation to low back pain of fractures in the region of the lower part of the back Kummell's disease spondylolisthesis sacro iliac strain arthritis syphilis tuberculosis and malignancy  
ADOLPH HARTUNG M D

Harris W Sacro Iliac Pain *Lancet* 1928 ccxv 1219

In the male locking of the sacro iliac joint is sufficient to prevent all but the slightest movement but in the female the bony surfaces of the pelvis are smoother the muscles are weaker and the joint is capable of a greater range of movement Therefore the female is more liable to sacro iliac strains and subluxations than the male

Strains of the sacro iliac joint are of three types (1) the sudden or acute (2) the subacute and (3) the chronic The sudden form results from a violent blow such as may be sustained in a motor accident or a fall The acute form is most often produced by a heavy lifting strain in the stooping position A sensation as if something were snapping is followed by difficulty in holding the body erect and the occurrence of a sharp pain in the lower lumbar region The pain may cease after a rest but recurs and becomes more severe the following day At first it is localized in the joint but later it spreads throughout the lumbar region the buttock and the leg

All of the nerves in the region of the sacro iliac articulation supply the joint with branches The nerve supply of the joint is derived from the lumbosacral cord the first and second sacral nerves the obturator and the superior gluteal nerves

Sacro iliac pain must be differentiated from sciatica and the pain of spinal cord disease arthritis of the hip and sacral fibrositis In the diagnosis it is necessary to rule out also diabetes tuberculosis new growths of the rectum lumbar cord or cauda equina and sacralization or hemisacralization of the fifth lumbar vertebra

In subacute and chronic sciatica a characteristic sign is loss of the Achilles jerk indicating that the neuritic process has passed inward from the nerve sheath and is involving the nerve bundles This sign usually appears before the patient complains of coldness numbness or blueness of the foot The posture in sciatica may suggest sacro iliac sprain or subluxation Chronic sciatica may be the result of a fall on the buttock with contusion of the nerve In such cases massive injections of salt solution into the nerve are of great benefit

Tuberculosis may attack the sacro iliac joint with the formation of a cold abscess

In osteoarthritis of the hip joint there is usually limitation of rotation and abduction of the hip with pain on movement the pelvis tending to move as a whole with the thigh movement The roentgenogram will show mushrooming of the head of the femur loss of the articular cartilage and disappearance of the articular space withipping from osteophytes at the edges of the acetabulum In many cases sciatica is a complication

NORMAN C BULLOCK M D

Yeoman W The Relation of Arthritis of the Sacro Iliac Joint to Sciatica *Lancet* 1928 ccxv 1119

The author reviews 100 cases of sciatica admitted to the Royal Bath Hospital Harrogate England In 36 per cent arthritis of the sacro iliac joints was found

Yeoman states that sciatica seems to be the result of joint distention with pressure on the lumbosacral cord and spasm of the piriformis muscle Strains of the sacro iliac joint may be a predisposing factor but in England are not a common single cause of the condition

The treatment of sciatica should be along the lines of that indicated in arthritis and periartthritis of other joints In the past few years alcohol injections and forcible stretching of the nerve under anesthesia have been completely abandoned in favor of hydrotherapy and other conservative measures

ROBERT V FURSTON M D

Wilhelm R New Contributions on the Etiology of Malformations of the Neck and Head of the Femur (Neue Beiträge zur Ätiologie der Schenkelhals- und Schenkelkopferbildungen) *Arch f orthop u Unfall Chir* 1928 xxvi 537

After a review of the literature the author reports five cases of malformation of the neck and head of the femur

The first case that of a fifteen year old girl with coxa vara was of particular importance because of the minute histological examination by Schmidt

In the author's opinion it is certain that congenital coxa vara cannot be ascribed to a single cause since on the one hand the theory that the condition represents the first degree of a defect of the femur is well supported by the roentgen findings and on the other hand the histological observations made in his first case support Bosse's theory that the cause is a chondrodystrophy Mueller's theory that the condition is similar to congenital pseudarthrosis of the leg has no support and the theory that intra uterine pressure is a cause has been generally rejected

The author's second case was that of a twelve year old girl with an endocrine disturbance (a mild form of myxedema) and congenital coxa vara The basal metabolism was 30 per cent below normal but could be brought promptly to the normal level by the administration of thyroid

in the last seven years he operated upon only nine joints. He emphasizes that if the patient is not very anxious for the return of function or has become so accustomed to narcotics that the desire for them has suppressed his desire to cooperate actively if the musculature shows very marked atrophy if the function of the internal viscera has been severely affected by the chronic sepsis or if the prerequisites for sufficiently long continued after treatment can not be met even surgical treatment of the joints is not apt to be successful.

In conclusion Layr discusses certain technical details of treatment such as the induction of anesthesia of the joint capsule and cavity, antiseptics, the replacement of the synovia, the softening of cicatricial tissue and the technique of synovectomy. **Block (Z)**

**Rixford E. Lesions Produced by Forced Abduction of the Shoulder.** *Surg Clin N Am* 1928 viii 1299

When the limit of motion of a diarthrodial joint is reached in any direction the ligamentous apparatus of the convex side becomes taut and resists further motion in that direction. If the force applied is severe enough something must give way.

Most abduction injuries of the shoulder are due to a fall with the hand and arm thrown forward for protection and the arm in pronation. The greater tuberosity strikes the upper border of the glenoid. As a result of this stress the capsular ligament frequently gives way at its lower portion where the tension is greatest. If the tear is slight it is classified as a sprain. If it is more severe it will result in dislocation of the head of the humerus.

If the capsule does not give way the tension may cause either a fracture of the surgical neck of the humerus or a fracture of the neck of the scapula.

In young persons a compression fracture may consist in separation at the epiphyseal line of the head of the humerus. Compression may cause also a shearing off and downward displacement of the greater tuberosity, a crushing fracture of the upper part of the glenoid or a buckling fracture at the surgical neck of the humerus.

**ROBERT V. FOSTON, M.D.**

**LeFort R. and Ingelrans P. Mild Osteomyelitis of the Vertebrae (Osteomyelites vertebrales à forme atténuée).** *Bull et mém Soc nat de ch* 1928 liv 1445

The authors report two cases of osteomyelitis of the spine. The first was that of a six year-old girl who during the course of a septicæmia developed multiple foci of bone infection one of which ultimately produced a psoas abscess. The lesion causing the psoas abscess was an abscess in the first lumbar vertebra which had been painless. Although the X ray showed almost complete destruction of the body of this vertebra the spine was normally flexible. Aspiration withdrew a greenish pus which yielded a pure culture of staphylococcus aureus.

The second case was that of a sixteen year-old girl with a gibbus and a fistulous tract on the left side of the spine which had been ascribed to Pott's disease. At operation a sequestrum equal to two-thirds of the body of a vertebra was removed. Recovery resulted rapidly. No bacteriological examination was made. **KELLOGG SPEED, M.D.**

**Jensen J. P. Spondylitis Produced by the Abortus Bacillus of Bang (Spondylitis durch Bangsche Abortbacillus verursacht).** *Hoist Tid* 1928 lxx 637

A farmhand seventeen years of age was seized with pains in the back and developed an abscess in Scarpa's triangle. There was a slight scoliosis but no gibbus formation. The roentgenogram showed the third and fourth lumbar vertebrae to be broken down, flattened out and connected by considerable new bone formation. The third lumbar vertebra had undergone greater destruction than the fourth. It was wedge shaped and somewhat twisted.

These findings suggested typhoid spondylitis but all of the tests for typhoid, especially the Widal test, were negative. About a year before the development of the spondylitis the patient had been treated in another hospital for one and a half months for fever, diarrhoea and stupor. At that time also typhoid was suspected but the bacteriological examination was negative.

The abscess in Scarpa's triangle healed after three punctures. Its contents were sterile. At the time the patient had been in the hospital for ten months the roentgenogram of the spinal column showed distinct signs of healing and there were no longer any symptoms.

As the abortus bacillus of Bang was being investigated at that time tests for that organism were also made. Agglutination and complement fixation were positive. In the authors' opinion it was established with considerable certainty that the infection was due to the Bang organism. The patient had worked on a farm had taken part in the herding of cattle and had often drunk of uncooked milk. While engaged in this farm work he was attacked by a febrile disease with a course and temperature which although not absolutely characteristic, nevertheless suggested an infection with the Bang bacillus. A distinct reaction to this bacillus was present even after two years.

Previously reported complications of this infection which is related to Malta fever include orchitis, membranous colitis and endocarditis. There is no record of associated involvement of bone but Roger described a case of spondylitis in Malta fever which was very similar to the case reported in this article. **FOXT (Z)**

**Cole P. F. X Ray Examination of the Lumbo-sacral Region with Reference to Low Back Pain.** *J Missouri State M Ass* 1928 xiv 561

Modern roentgen ray examination has revealed a new group of conditions which may be responsible

such as might be found in a simple connective tissue new growth

It is suggested that complete absence of the tibia, absence of the lower part of the tibia, congenital fracture of the tibia with shortening of the bone, pseudarthrosis of the tibia without shortening of the bone and simple bends of the tibia may be due to malformation and represent different grades of the one pathological condition. There is a certain amount of evidence which suggests that in so called pseudarthrosis of the tibia the disturbing influence is transmitted by the germ plasma.

NORMAN C BULLOCK M D

Hughes W K. Hallux Valgus. *J College Surg Australasia* 1928 1 214

Operations for hallux valgus are all based upon the fact that the deformity is inherent in the bone and inflammatory conditions arising therefrom. While the inflammation of the bursa and the periosteal exostoses in the vicinity cause pain and discomfort the head of the metatarsal bone is never enlarged and its articular cartilage is seldom involved to any appreciable extent.

As the obstacle to restoration is the contraction of the skin and soft tissues between the first and second digits and of the lateral metatarsophalangeal ligament of the first digit the author divides these structures completely. A skin graft may be necessary if the valgus is marked. The big toe is then bandaged in an over corrected position and the patient allowed to walk as soon as the graft is adherent. All exostoses are chiselled off and misplaced sesamoid bones are removed before the flaps are sutured.

The author believes that hallux valgus may be due to congenital shortening of the lateral metatarsophalangeal ligament rather than to the wearing of poorly shaped shoes.

NORMAN C BULLOCK M D

## SURGERY OF THE BONES JOINTS MUSCLES TENDONS ETC

Dunn N. The Surgery of Muscle and Tendon in Relation to Infantile Paralysis. *Proc Roy Soc Med Lond* 1928 xiv 243

During the acute stage of infantile paralysis which lasts from one to six weeks the treatment of the muscles should consist solely of rest with measures to prevent postural deformities. During the period of convalescence massage electrical stimulation and other treatment should be directed only to the affected muscles. The recumbent position should be maintained until the spinal column can be kept erect by muscular power and as long as there is any weakness of the gluteal muscles.

The abduction splint for the shoulder the caliper splint for the knee and simple splintage to support the foot will usually prevent deformity and over stretching of the weak muscles while moderate activity is allowed. These apparatus must be used until it is evident that further weakness will not

follow their removal. They should not be discarded suddenly. The indication for reduction of splintage is the ability of the patient to hold the limb in the position which splintage insures. Splints to prevent deformity due to joint instability or overaction of stronger muscle groups should be retained unless these tendencies can be corrected surgically.

As a rule the orthopedist does not see the patient until long after deformity has been established. Surgical attempts at tendon elongation or division should then be made only when (1) correction of the deformity will improve function (2) division or elongation of tendons is necessary to correct the deformity or (3) the power of the shortened tendon cannot be utilized by tendon transplantation at the time of the operation. With regard to tenotomy it is well to remember that a shortened tendon is usually an active tendon. It is a safe rule never to divide a tendon for the correction of deformity alone.

In the discussion of the treatment of flexion contracture of the hips emphasis is placed on gradual mechanical correction in three stages: (1) correction of the lordosis by flexion of both hips while the spine and one flexed hip are immobilized in plaster of Paris (2) gradual extension of the other leg in a Thomas knee splint and (3) incorporation of the corrected limb in plaster with the spine and similar gradual extension of the other leg. Surgery is seldom indicated when this deformity is the result of infantile paralysis.

Dunn discusses tendon transplantation from the historical anatomical and physiological viewpoints. Successful results depend upon observance of the following rules:

1. Correction of the deformity must be complete previous to the operation.
2. The transplanted muscle must run in a direct line from its origin to its insertion.
3. The muscle must be of sufficient power to meet the strain to be imposed upon it.

When the muscle is weak transference of muscle power may be of advantage as an adjunct to other procedures such as tenodesis and arthrodesis. Successful results depend also upon whether the transplanted tendon can be trained to perform its new function. Re-education of an isolated tendon to act apart from its group is more apt to be successful in the upper extremity than in the lower extremity. In the leg there are only two muscle groups: (1) the anterior tibial and (2) the posterior tibial which includes the peroneals and the tendon of Achilles. No tendon transplanted from the peroneal or posterior tibial group will be effective in overcoming the loss of active dorsiflexion.

Dunn discusses the treatment of deformities of various types. He states that the only transplantation of value for quadriceps insufficiency is transference of either the tensor fasciae latae or of the sartorius to the patella. In deciding whether to choose the former or the latter Dunn determines which is the stronger by observing whether the leg is turned out by the sartorius or in by the tensor when

In the third case a case of bilateral coxa vara in an adult the histological picture was that of subchondral fracture with callus formation and foci resembling osteitis fibrosa. As a whole, the picture suggested Perthes disease.

In the fourth and fifth cases the condition resembled osteitis fibrosa.

In the first four cases the malformation was undoubtedly of hereditary origin as malformations of bones were found also in other members of the patient's family.

HACKERBORN (Z)

Wade R. B. The So Called Congenital Pseudarthrosis of the Tibia. *J. College Surg. Australasia* 1: 181

Inglis K. The Pathology of Congenital Pseudarthrosis of the Tibia. *J. College Surg. Australasia*, 1: 194

WADE states that the so called pseudarthrosis of the tibia of congenital origin is not merely a fracture that has failed to unite but the result of a definite pathological condition of the bone evident in the roentgenogram which weakened the tibia led to its fracture and prevented union of the fracture. As a rule the disease affects the tibia only and at only one site the lower middle fourth of the bone but in some instances it involves both the tibia and the fibula.

Before fracture the condition is usually found in the newborn since the fracture occurs early. The leg curves forward in its lower half. X ray examination reveals at the site of the curve at the anterior edge of the tibia an area of rarefied bone beginning at the periosteum extending either partly or completely through the depth of the tibia and varying in length from 2.5 to 3.7 cm. The X ray appearance is similar to that of osteitis fibrosa cystica. The fibula becomes thickened and curved probably because of shortening of the tibia.

Fracture of the tibia may occur without fracture of the fibula but because of the inability of the fibula to support the weight of the body a fracture of the fibula occurs sooner or later.

Union following fracture is slow and incomplete. No callus is thrown out and the union is soft allowing bending for a considerable time. The roentgenogram reveals fibro-union with persistent porosis at the site of the fracture.

In cases of frank pseudarthrosis the bone is atrophied. The atrophy is especially marked in the lower fragment. In pseudarthrosis that has existed for some time the condition of the tibia and fibula is identical.

While the roentgen appearance suggests osteitis fibrosa the fracture occurring in the latter condition tends to unite and union is of a normal character. The union occurring in congenital pseudarthrosis of the tibia simulates that occurring in osteogenesis imperfecta but in osteogenesis imperfecta solid union is not so long delayed.

The author suggests that in congenital pseudarthrosis of the tibia we have a condition of disordered

osteogenetic function at the juncture of the lower and middle thirds of the tibia and perhaps also in the fibula which is responsible for the original pathological changes the union that yields and bends and the non union.

The treatment generally adopted in the author's cases is the use of a sliding bone graft from the same side. Retention of position has been attempted by the application of plaster of Paris for a short time followed by the application of a double trough splint. At a later stage when walking is possible a moulded sole leather boot extending to the knee is ordered.

The chief points in the article are summarized as follows:

1. There exists as a definite entity a condition in the lower fourth of the tibia in which at birth may be found an area in the bone with a roentgenographic appearance similar to that found in osteitis fibrosa cystica—areas of porosis crossed by a few bone trabeculae.

2. This condition causes a swelling of the bone and usually forward bowing.

3. A fracture may be present at birth or occur subsequently.

4. The fracture may be followed by (a) a pseudarthrosis with no tendency toward bone regeneration or (b) union which occurs not by means of callus but rather by permeation of the affected area by new bone and is soft and yielding for some years before consolidation becomes firm and the bone is able to bear weight.

5. Whether a pseudarthrosis supervenes or not occurs there is always pronounced shortening of the leg and foot.

6. The outcome is usually not good. Bone grafting gives the best results.

7. It appears that there is a deficiency in the power of osteogenesis at this part of the tibia the cause of which is obscure.

INGLIS reports his findings in a study of specimens from three cases of congenital pseudarthrosis of the tibia. The essential part of the lesion in resected portions of the diaphysis seemed to be the centrally situated connective tissue which was partly fibrous and partly fibroblastic. Certain changes partly of a necrotic nature which were present in the bone encircling the centrally situated connective tissue were of only incidental interest. The appearance of the resected portion of bone in each of these cases suggested that there had been a fracture which had united. The greater difficulty experienced in sawing through the specimen at the line of fracture than immediately above or below that line indicated that the capacity to form bone had persisted in this area. In one case there was a congenital malformation of the fourth metatarsal bone and the phalanges of the fourth toe. In the one case in which a bacteriological examination was made the cultures proved sterile.

In one case the macroscopical and microscopical appearances of the central connective tissue were

MacAusland W R The Treatment of Congenital Dislocation of the Hip by Open Operation  
*Surg Gynec & Obst* 1928 xlvii 607

The author states that the open operation which affords the opportunity to study the pathological changes and involves much less danger than forcible manipulative and mechanical procedures may be used to advantage more often than is the customary practice. Examination of the pathological changes often reveals an hour glass constriction of the capsule marked anteversion of the femoral neck or an acetabulum filled with adherent tissue covered over by the inferior capsule. In the presence of such alterations the closed method is futile.

Operative interference is indicated in the cases of children from four to eight years of age when one or two closed manipulations have failed. In the cases of older children it is the method of choice and in those of adults it is indicated to correct deformities and relieve arthritic symptoms.

Simple replacement of the head within the socket is the ideal method of treatment as it insures a good anatomical and functional recovery. It is applicable to cases in which the acetabulum is of sufficient depth to retain the femoral head and the shape of

the head is normal or nearly normal. Marked internal rotation persisting after reduction may be corrected by osteotomy of the femur. When simple replacement is sufficient the author applies a plaster spica from the breast line to the ankles with the hip in abduction and inward rotation and the knee flexed. The spica is worn for eight weeks. At the end of that time a new one is applied with the hip in abduction of from 15 to 20 degrees and in marked inward rotation with the knee extended. A plaster spica is used to maintain the hip in position for from six to ten weeks depending upon the stability and the mechanical problem involved. When the plaster spica is removed the hip spine and calves are massaged and put through passive movements daily and the patient is taught to walk properly with the feet straight ahead to favor the return of muscle balance. Swimming is a most beneficial form of exercise.

When the patient's age or the extent of the pathological changes render simple replacement impossible reconstruction operations may produce satisfactory functional and anatomical results.

Twelve cases of open reduction are reported.

GEORGE C HENSEL, M D



an attempt is made to extend the knee. He believes that transplantation of the biceps or the inner ham strings may give increased stability to the knee but does not increase the power of extension.

He states that no tendon transplantation will compensate for deltoid paralysis. In this condition arthrodesis of the shoulder joint is indicated provided the patient has good control of the scapula and a useful functioning hand.

Tendons may often be used as ligaments to limit joint motion. In cases of calcaneus deformity for example a portion of the Achilles tendon may be fixed to the tibia.

The degree of tension under which the tendons should be sutured and whether the attachment should be to tendon, periosteum or bone are still matters of argument. The author sutures transplanted tendons under considerable tension and not necessarily to periosteum or bone.

CHESTER C. GUY, M.D.

Kidner, F. C. End Results of Extra Articular Fixation of the Tuberculous Hip in Children. *J. Am. Med. Ass.* 1918 xci 1865.

Arthrodesis is done in tuberculosis of the hip in the belief that stiffness of the joint is the best possible result in that disease. The observation of English and European surgeons that in many cases recovery with motion results can be explained only by the assumption that the disease is not so virulent in England and Europe as it is in America.

Excision of the head and intra articular arthrodesis have failed because there is not enough healthy bone to form a firm union. In the past fifteen years several methods of extra articular fixation have been suggested. In general these operations are of two types: the insertion of bone grafts from another part of the body and the use of bone from the trochanter and ilium.

The author has operated upon seventeen patients by the Hibbs method. This procedure consists in transposition and rotation of an osteotomized vertical wedge from the trochanter without removal of the muscle attachments so that it has bony contact with its own stumps with the roughened superior surface of the femoral neck and with a trap-door groove in the side of the ilium. The only contraindication is the presence of fresh open sinuses.

The postoperative treatment consisted in immobilization in a plaster spica with the leg in abduction to hold the graft against the ilium. The casts were left on for from three to nine months. Weight bearing was begun usually after about six months.

In twelve of the seventeen cases firm bony union resulted and in fourteen a good functional result was obtained. In two cases free pus and wide destruction prevented union. In all of the seventeen cases the progress of the disease and all symptoms have stopped.

The ages of the patients ranged from four to fourteen years and the duration of the disease before

operation from eighteen months to eleven years. The patients who are the most comfortable are those with neither abduction nor adduction and with from 20 to 40 degrees of flexion.

WILLIAM A. CLARK, M.D.

## FRACTURES AND DISLOCATIONS

Craig, C. A Series of Fractures of the Long Bones Treated by the Methods of R. H. Russell. *Russell Med. J. Austral.* 1923 n 838.

Craig reviews 114 fractures of long bones treated by the method of Russell which is based on the belief that if the muscles are placed in an attitude of physiological rest their action on the fragments of the fractured bone may be disregarded. In Russell's opinion there is no evidence that a muscle in a state of rest acts as an elastic band.

The author emphasizes the importance of early active motion in the treatment of fractures. He believes that restoration of the contour of the limb is of more importance than exact reposition of the broken bone ends.

PAUL C. COLONY, M.D.

Simon, J. Traumatic Posterior Dislocation of the Shoulder (Traumatische Schultergelenkluxation nach hinten). *Chir. Woch.* 1928 lvi 19.

In ninety dislocations of the shoulder seen in the Bruenn Clinic there was only one posterior dislocation. The latter was caused by a fall from a bicycle. The patient could not recall whether he fell directly on the shoulder or on the outstretched hand. In most cases posterior dislocation of the shoulder is the result of a fall on the outstretched hand which causes forcible inward rotation of the shoulder joint.

In experiments on the cadaver the author was able to produce such a dislocation eight times by forcible inward rotation of the raised arm. In four instances infraspinous luxation resulted. In the subacromial dislocations the joint capsule on the posterior aspect of the joint and the teres minor muscle were torn. In the infraspinous luxations the capsule was torn anteriorly and posteriorly.

In the case reported by the author reduction by Kocher's method was followed by complete recovery. Knoch. (Z.)

Magnuson, P. B. Fractures of Metacarpals and Phalanges. *J. Am. Med. Ass.* 1918 xci 1339.

Magnuson states that deformities following fractures of metacarpal bones or of the phalanges are due to the action of the interossei and the lumbricals.

In the application of splints to such fractures the contour of the bone must be taken into consideration. The dorsal surface of the metacarpal bones being almost a straight line. Magnuson uses posterior splints for metacarpal fractures unless they are of the oblique type in which case traction by means of a banyo splint is better. He objects to the practice of obtaining traction by suturing through the finger nail.

PAUL C. COLONY, M.D.

sion of blood is most beneficial and hastens the regeneration of blood. However a successful result cannot be expected when the loss of blood has been too great or the patient has been too long in a state of acute anæmia.

In several of the cases reviewed there was a reaction after the re infusion and in 0.7 per cent this may be regarded as the cause of death. From experiments carried out on animals to determine the cause of these complications the author concludes that blood extravasated into the abdominal cavity is defibrinated but in contrast to blood defibrinated *in vitro* is not toxic. Up to sixteen hours the blood in the abdominal cavity is not greatly changed. After twenty four hours hæmolytic sets in and this is the cause of the harmful reactions after re infusion.

Blood from the portal vein may also be re injected with harm. WINTWARTER (Z)

**Gramén A.** Accident Transfusion of Leukæmic Blood. *Acta chirurg Scand* 1928 lxxv 369

The author reports a case in which seven weeks after a blood transfusion the donor was found to be suffering from acute myeloid leukæmia. His death occurred two weeks later. The recipient who had been treated for a severely bleeding duodenal ulcer died two weeks after the transfusion.

No similar case has been mentioned in the literature. Experiments reported—even those performed in four cases of inoperable cancer in man—do not indicate that leukæmia can be transmitted by blood transfusion.

# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

## BLOOD VESSELS

Middleton W S Venous Pressure *Ives & Anal*  
1928 vii 360

Middleton reviews briefly the development of venous pressure studies and discusses the importance of such determinations in establishing the condition of the myocardium. By estimating the venous pressure it is possible to determine the circulatory load on the right heart and indirectly the condition of the left heart.

Using the indirect method with the patient recumbent and the back of the hand or forearm on a level with the right auricle the author has found the average venous pressure in the healthy young adult to range between 4 and 6 cm. of water. In the peripheral veins there is little if any respiratory variation under ordinary conditions. Cheyne Stokes respiration is accompanied by a rise in the venous pressure during apnoea and a fall during hyperpnoea. Voluntary over ventilation also leads to a fall in the venous pressure. In asphyxia there is no constant change until cardiac failure leads to an increase in the pressure.

Other factors being equal lower readings are found in women than in men. The pressure tends to rise during the day and to fall with rest in bed. Elevation of the alveolar carbon dioxide increases the venous pressure. The size or prominence of the peripheral veins has no bearing on the pressure and the level of this tension is entirely independent of the arterial blood pressure as well as of peripheral arteriole dilatation or constriction.

Middleton studied also the venous pressure in cardiac decompensation following venesection and during general anaesthesia. He draws the following conclusions:

- 1 Venous pressure determinations reflect accurately the right heart load.
- 2 Venous hypertension excluding local interference with venous return and the unusual cases of phlebosclerosis means myocardial failure.
- 3 In cardiac decompensation the critical level of 0 cm. of water (a maintained or an ascending curve) is an excellent guide to venesection a valuable method of combating failure of the right heart.
- 4 Preliminary studies on the course of venous pressure in general anaesthesia indicate decided changes apparently dependent upon respiratory influences physical effort and carbon dioxide tension in the inspired air. J. C. M. MORA M.D.

Holman E F Arteriovenous Aneurism *Surg Clin N Am* 1928 viii 1413

Holman reports two arteriovenous aneurisms involving the femoral vessels and one intracranial

lesion. He emphasizes the careful investigations necessary to determine the exact nature of an aneurism—whether it is a simple sacculated or an arteriovenous aneurism.

The characteristic features of the lesion are (1) a thrill and bruit continuous throughout the cardiac cycle but intensified during systole (2) a transient increase in the blood pressure and a fall in the pulse rate when the fistula is closed by digital compression (3) a high content of oxygen in the venous blood obtained from the veins near the lesion as compared with the oxygen content of blood removed from veins remotely situated.

In cases of arteriovenous aneurism the artery alone should never be ligated proximal to the fistula as is so frequently done for the cure of simple aneurism. Such proximal ligation is contra-indicated because of the danger of gangrene of the limb beyond the fistula.

Arteriovenous communications should be eliminated because of the associated development of cardiac dilatation. The operation of choice is quadruple ligation of the artery and vein proximal and distal to the communication followed by excision of the fistula.

The elimination of a fistula may precipitate cardiac decompensation incident to the excision of an already dilated heart. To prevent this excessive dilatation venesection may be necessary in the course of the operation to withdraw the increased volume of blood which has accumulated in the circulatory system during the existence of the fistula.

Prolonged care is necessary after the operation to prevent myocardial strain from the increase in diastolic pressure following the elimination of the fistula.

JACOB M. MORA M.D.

## BLOOD TRANSFUSION

Filatov A Clinical and Experimental Contributions on the Effect of Blood Extravasated into the Body Cavities (Mitsche und experimentelle Beiträge zur Beeinflussung des in die Körperhöhlen ergossenen Blutes) *Arch f klin Chir* 1928 cx 184

The author first describes the technique of re-infusion. He emphasizes that the blood should be removed from the abdominal cavity by means of a scoop as when it is removed with a tampon it is usually hemolyzed. After its removal he filters it through eight layers of gauze. To the filtrate 4 per cent citrate solution is added in the proportion of 2:1000. The injection is made into the vein at the elbow. The blood must be carefully protected against contamination.

Twenty-six cases of re-infusion are reported. The author believes that in the majority of cases re-infu-

narcosis is a function of the concentration of the narcotic in nervous tissues the law of all or none holds good that is when the concentration is effective complete paralysis results

Winterstein identifies the all-or none law of narcosis with the long recognized all or none law of excitation. In spite of this he states that the intensity of narcosis varies within certain limits directly with the concentration of the causative agent. This is contrary to the author's findings.

Mansfield has come to the conclusion that the all or none law applies only to nervous structures. Winterstein explains this by stating that in non nervous structures there is no paralysis of conductivity. However studies on automatic nervous tissue (Hecht) have demonstrated that Winterstein's theory is incorrect. On the isolated intestine the effect of narcotics did not at all correspond to the degree of the narcosis. Even here the all or none law of narcosis seemed to apply. The same law seemed to hold good also in experiments on the respiratory center.

In the last part of his article the author opposes Winterstein's theory that the all or none law of narcosis is the same as the all or none law of excitation. He believes that investigations in narcosis first led to the all-or none law of excitation. The all or none law of narcosis applies where the all or none law of excitation does not apply (autonomic nervous tissue) and the all-or none law of excitation (in muscle tissue) is operative where the corresponding law of narcosis does not hold good. This fact seems to prove that the all-or none law of narcosis is not identified with the all or none law of excitation and that the reaction of nerve cells to narcotics is very different from that of other cells. GENEWER (Z)

**Franken H and Schuermeyer** Collapse and Narcosis. The Determination of the Volume of Circulating Blood in Ether Avertin and Acetylene Anesthesia and Its Significance (Kollaps und Narkose Ermittlung der zirkulierenden Blutmenge bei Äther Avertin und Acetylen Narkose und ihre Bedeutung) *Narkose u. Ines.* 1928 1 437

The authors carried out experiments to determine the variations occurring in the volume of circulating blood in narcosis induced by different anesthetics and their relation to conditions of collapse. For corresponding experiments on human beings they chose ether and avertin to lower the blood pressure and acetylene to raise it.

In ether and avertin anesthesia the fall in the blood pressure was paralleled by a decrease in the volume of the circulating blood. Therefore the conditions were those of collapse. In narcylene anesthesia the volume of the circulating blood increased with the increase in the blood pressure and the effect was that which is sought by the use of the usual therapeutic measures in collapse. The condition of the circulation brought about by ether anesthesia with its lowered blood pressure and decreased volume of circulating blood is not only restored to normal by the subsequent administration of narcylene but is even carried beyond the normal.

The authors do not say where the stagnant blood remains in collapse but it appears from their statements that displacement of the blood volume into the splanchnic region occurred.

Franken and Schuermeyer conclude that when an operation is imperative in the presence of collapse or when collapse is threatened the anesthesia should be induced with acetylene. COLLEY (Z)

# SURGICAL TECHNIQUE

## OPERATIVE SURGERY AND TECHNIQUE POSTOPERATIVE TREATMENT

**Stegemann H** *The End Result in a Case of Embolism of the Pulmonary Artery Cured by the Trendelenburg Operation (Dauerergebnis eines durch die Trendelenburgsche Operation geheilten Falles von Embolie der Art. pulmonalis)* *München med Wchnsch* 1928 **xxv** 1165

The author reports the end result in a case of embolism of the pulmonary artery which was operated upon successfully by von Kirschner in 1924 by the Trendelenburg method. The examinations were carried out over a period of four years with all possible aids to internal diagnosis and with the assistance of internists. The apex beat curve, electrocardiograms and jugular and carotid pulse tracings are reproduced. As no pathological findings could be demonstrated in either the heart or the lungs a complete and permanent cure was obtained.

STEGEMANN (Z)

## ANTISEPTIC SURGERY, TREATMENT OF WOUNDS AND INFECTIONS

**Regenbogen J H** *The Relief of Stasis in the Inflamed Blood Vessel by Means of Alkali (Ueber die alkalische Beseitigung der Stase im entzündeten Blutgefäß)* *Frankfurt Ztschr f Path* 1928 **xxvi** 280

The author's investigations regarding the relief of stasis in inflamed blood vessels by means of alkalies were repeated by Merk. Merk found that local stasis was relieved not only by injected carbonate but also in non-injected control animals by simple retention of the member in tap water. He therefore questions the value of the alkali.

In reply the author reports in detail a large series of experiments which lead to the conclusion that in a manner similar to the direct administration of alkali as in his standard experiment all of Merk's experimental procedures brought about an alkalization of the inflamed area indirectly. Such an alkalization is capable of causing recession of the inflammatory reaction with relief of the stasis. The author therefore sees in Merk's experiments further confirmation of his theory. From the results of both investigations he concludes that the cause of inflammatory processes is about to be revealed.

STEGEMANN (Z)

**Zoeller C J** *Vaccination Against Tetanus with Tetanus Anatoxin (La vaccination contre le tétanos par l'anatoxine tétanique)* *Arch med mil* 1928 **lxviii** 65

Even repeated injections of serum do not wholly protect against the development of tetanus as the

more frequently the serum is injected the more rapidly it is excreted. The author therefore attempted to produce a permanent immunity by vaccination with anatoxin. Anatoxin is prepared from the toxin by treating the latter with formalin and heat (2 c cm of formalin to 1 liter of toxin from four to six weeks in the incubator). The anatoxin is not toxic. It has antigenic properties and is precipitable and thermostable. Prophylactic treatment with anatoxin protects against several times the lethal dose of toxin. The precipitability serves in the titration of the anatoxin.

Human beings are able to tolerate the subcutaneous administration of even 5 c cm of anatoxin without a reaction. Immunization is begun with the subcutaneous administration of 1 c cm. After fourteen days 2 c cm are given. After another week it may be demonstrated that 1 c cm of blood will neutralize from one to ten times the lethal dose of toxin. If the second injection is given after four weeks the neutralizing power is increased one hundred fold and by a third dose it may be increased to even a thousand fold (the tests were made on guinea pigs). Large doses of the anatoxin give less satisfactory immunity than smaller doses.

The author suggests that active immunization with anatoxin be done in the cases of all persons who are exposed to tetanus such as gardeners, riders and soldiers. In military surgery, protective inoculation would be of great value.

In acute danger of tetanus serum prophylaxis must retain its place, but active immunization may be begun at the same time and should protect for a year.

KARSTEN (Z)

## ANESTHESIA

**Mansfield G** *The All or None Law of Narcosis and the Critique of Hans Winterstein (Das Alles-oder-Nichts Gesetz der Narkose und die Kritik Hans Wintersteins)* *Arch f exper Path u Pharmakol* 1928 **cxviii** 268

In the author's long study of the relationship between the concentration and the effect of narcotics it was discovered that for the indirect excitability of muscle and also for all other nervous functions there is only one narcotic effect, namely, the complete abolition of function and that for the determination of the threshold concentration of a narcotic the usual experimental periods are too short. A definite concentration may remain ineffective for several hours and then cause a complete reversible paralysis.

The depth of narcosis was determined quantitatively from the measurable variations in the reflexes after a known concentration had worked on the nervous tissues for a sufficiently long period of time. Whereas in non-nervous organs the effect of

narcosis is a function of the concentration of the narcotic in nervous tissues the law of all or none holds good that is when the concentration is effective complete paralysis results

Winterstein identifies the all or none law of narcosis with the long recognized all or none law of excitation. In spite of this he states that the intensity of narcosis varies within certain limits directly with the concentration of the causative agent. This is contrary to the author's findings.

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# PHYSICOCHEMICAL METHODS IN SURGERY

## ROENTGENOLOGY

Anderson C. C. *The Radiological Diagnosis of Hydatid Infection* *Brit J Radiol* 1928 1, 428

Hydatid infection is very common in New Zealand. The parasite gains entrance through the mouth and the embryo is set free by the digestive juices in the upper part of the alimentary tract. It burrows through the wall of the bowel and gains entrance to the blood stream. Thus it reaches the liver and the lungs and may even enter the systemic circulation. When there is sufficient contrast between the hydatid cyst and the surrounding tissue the roentgenographic demonstration of the cyst is comparatively simple and the interpretation of the roentgen findings is not especially difficult. However in all cases it is necessary to know that the patient has lived in a sheep raising country or has had contact with animals especially dogs. The final diagnosis depends upon the serological test.

When the affection occurs in the thoracic cavity or in the skeleton there is sufficient contrast between the density of the cyst and the surrounding tissue to reveal the presence of the cyst. When the cyst occurs in the liver the resulting irregularity of the dome of the diaphragm calls attention to its presence. When the cyst is in the abdomen itself the diagnosis is difficult. Often its presence is revealed only by displacement of the viscera. Pneumoperitoneum has been advocated as a diagnostic procedure but its use in cases of hydatid cyst involves considerable risk. The roentgen sign of a cyst in the lung is a circular ovoid or elliptical shadow of homogeneous density. If the condition is complicated by sepsis its differentiation from pulmonary abscess is impossible. For its localization roentgenograms in both the postero-anterior and the lateral planes are necessary. CHARLES H. HEACOCK M.D.

Glasser, O. Fortmann U. and Seltz Y. B. *The Condenser Dosimeter and Its Use in Measuring Radiation Over a Wide Range of Wave Lengths* *Am J Roentgenol* 1928 22, 595

Many problems in present-day radiation dosimetry cannot be solved satisfactorily with the available dosage instruments. The condenser dosimeter was devised to meet the need for an instrument involving modified measuring methods. It consists of two parts: (1) a condenser to which an ionization chamber is attached and (2) a string electrometer of improved type including a static charger. For dosage measurements the former is electrically connected with the latter and the whole system is charged to a known potential which is indicated on the electrometer scale. The condenser unit is then removed and placed with its ionization chamber in

the field of radiation to be measured. After exposure for a specified time the condenser unit is again returned to the electrometer and the loss of charge is read directly on the scale. Measurements thus obtained may be converted into R units by a known formula. Practical applications are described in detail and various experiments and tests are cited. Surface and deep doses were measured with the instrument over a wide range of wave lengths and the results tabulated.

In addition to the uses outlined the condenser dosimeter is extremely well adapted for protection measurements since the condenser unit can be left in position over an extended period of time during which the stray radiation is to be measured. Roentgenographic exposure and roentgenoscopic times can also be conveniently determined with this instrument. ARTHUR HART, C. D.

Evans W. A. and Leucutia T. *The Massive and Hypermassive Radiation in the Treatment of Skin Cancer* *Brit J Radiol*, 1928 1, 396

The authors review the development of the roentgen ray treatment of cancer of the skin and divide it into four periods: (1) the period of basal (2) the period of fractional treatments (3) the period of combined methods and (4) the period of massive or hypermassive radiation.

The massive or hypermassive dose is of sufficient strength to produce a direct destructive action. No reliance is placed on any indirect effects or on the secondary tissue reactions produced by the radiation. The amount of radiation necessary to produce a massive dose is from 100 to 200 per cent of the skin unit dose (a good erythema dose in the normal skin). A hypermassive dose is several skin units. This massive dose need not necessarily be given at one time but the fractional massive dose differs from the true fractional dose in that an erythema is produced. The true fractional method is contra-indicated in cancer of the skin. The authors prefer to give the massive dose at a single application. For small superficial lesions they employ the hypermassive dose but for larger lesions they use the massive dose which is safer.

The first requisite of massive and hypermassive roentgen ray therapy is a primary destructive (cytotoxic) effect of the roentgen rays on the carcinoma cells. The second is preservation of the normal cells surrounding the carcinoma. These two postulates of fundamental importance govern the technique employed in the treatment of the different forms of carcinomata. They are directly responsible also for our rather arbitrary classification of skin cancers into the following groups: (1) small superficial nodular or ulcerated lesions from 1 to

5 cm. in diameter (2) medium ulceronodular lesions from 5 to 10 cm. in diameter (3) fungous lesions the chief characteristic of which is proliferation above the skin level (4) large superficial, ulcerated lesions 10 cm. or more centimeters in diameter but only 1 or 2 cm. in depth (5) large deep ulceronodular lesions 10 cm. or more centimeters in diameter and more than 2 cm. in depth

There is no doubt that the hypermassive method represents today the best method in the treatment of cancers of the skin especially when the lesion is in its incipient stage and no other method of treatment has been used. Most roentgenologists agree that the incidence of permanent cure is more than 90 per cent.

CHARLES H. HEACOCK, M.D.

#### MISCELLANEOUS

Findlay G. M. Ultraviolet Light and Skin Cancer. *Lancet* 1928 ccxv 1070

The frequency of skin cancer among persons engaged in outdoor occupations and in countries and locations with much sunlight and the fact that the common sites of the lesion are areas of the body which are exposed to the light suggested to Findlay that sunlight particularly ultraviolet light might be of importance in the genesis of cancer of the skin.

In experiments on mice in which the animals were exposed to a mercury vapor lamp with a spectrum said to range from 2,000 to 10,140 Å. it was found possible to produce papillomata and malignant epitheliomata of the skin by exposure to the ultraviolet light for a period of not less than eight months. Mice which were tarred and exposed to the ultraviolet light developed cancer in a shorter time than mice treated with either the tar or the ultraviolet light alone.

GERTRUDE BEARD

Martin W. Physical Measures as an Adjunct to Surgery. *J. Med. Soc. N. Jersey* 1928 xxv 671

Doran W. G. Physical Therapy Aids in Fracture and Orthopedic Cases. *J. Med. Soc. N. Jersey* 1928 xxv 676

MARTIN confines his discussion to the various forms of light and electrical currents. He has found that the use of the static wave current and diathermy greatly shortens the period of disability in cases of sprains that open wounds heal more promptly when they are treated with some form of light and that paralysis is benefited by the intelligent application of galvanism.

He believes that the early use of electrical currents in the treatment of fractures has not been properly investigated by surgeons and that it will greatly reduce the after treatment necessary.

He recommends physical measures both before and after surgery in many chronic abdominal conditions.

DORAN discusses the treatment of acute pain in the shoulder, acute foot strain and peripheral nerve injuries by electrotherapy, heat, light, hydrotherapy, rest, exercise and posture. He emphasizes the necessity of distinguishing between an articular sprain and a fracture sprain as each requires a different form of treatment.

An important part of the article deals with the treatment of fractures by physical therapy. The injury to the soft structures as well as injury to the bone is considered and the treatment before and after fibrous union is described. Doran states that function of the limbs is best restored by exercises under the supervision of a competent instructor. In conclusion he emphasizes the importance of cooperation between the surgeon and the technician.

GERTRUDE BEARD



## MISCELLANEOUS

### CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Bowen B D Vaughan S L and Koenig E C  
The Relation of Liver and Gall Bladder Disease to Diabetes with a Report of Liver Function Tests and Cholecystography in a Group of Cases of Diabetes and Alimentary Glycosuria  
*Bull Buffalo Gen Hosp Buffalo N Y* 1928 vi 41

The results of liver function tests and a study of gall bladder function by cholecystography which were made by the authors in cases of diabetes and cases of alimentary glycosuria were too inconsistent to justify definite conclusions but they appeared to be positive more frequently in the cases of diabetes than in those of alimentary glycosuria. The authors suggest that there may be a relation between cholecystic disease and positive liver function tests in diabetes. If the liver was at fault in the cases of alimentary glycosuria this could not be demonstrated by the tests used.

In the majority of the cases studied the retention of phenoltetraiodophthalein sodium was slightly higher than that established by Graham as normal. Autopsy statistics show but a slightly higher incidence of gall stones in diabetics than is found at routine postmortem examinations.

The evidence that cholecystitis may be a cause of diabetes does not appear to meet all the requirements necessary to establish such a relationship.

JOHN H GILLOCK M D

Bennett T I and Poulton E P Raynaud's Disease Associated with Cancer of the Stomach  
*Am J Med Sc* 1928 clxvi 654

The authors report the case of a man sixty years of age who complained of sensitiveness to cold in his hands and seemed to present the typical picture of Raynaud's disease. As a child the patient had suffered from chilblains.

Treatment with faradism and later by intravenous injections of radium emanations was unsuccessful. For the relief of the pain morphine was necessary. Taylor removed the right inferior cervical sympathetic ganglion and was proceeding to perform parietal sympathectomy on the left radial and ulnar artery when the patient died.

Autopsy revealed a large carcinoma on the lesser curvature of the stomach near the esophageal opening. The removed cervical ganglion contained carcinoma cells of gastric origin.

The authors have been able to find the report of only one other case of cancer of the stomach associated with Raynaud's disease. They believe that the cancer cells in the ganglion are the cause of the Raynaud's disease.

CARL R BREINKE M D

### GENERAL BACTERIAL PROTOZOAN AND PARASITIC INFECTIONS

Hueper W C Agranulocytosis (Schultz) and the Agranulocytic Symptom Complex  
*Arch Int Med* 1928 xli 893

Agranulocytosis usually begins suddenly during good health with a continuously high fever a faint irregular pulse of poor quality malaise dysphagia and dyspnea. Chills may occur and soreness of the throat develops within three or four days. In about 50 per cent of the cases there is slight jaundice. Other more general symptoms may occur and death results after coma for from two to seven days. In other cases the condition may have a more chronic course lasting for several weeks and showing remissions but it is usually fatal. Only six recoveries are on record.

In the beginning the tonsils are enlarged and reddened and show white or yellowish plugs. Soon they become covered by a dirty coat which on removal leaves an ulcerated surface. Sloughing may occur and spread and factor is present. Hemorrhage is rare. The glands in the region involved are large and tender. In the late stages general examination may show bronchopneumonia enlargement of the liver and spleen and anal and vaginal ulcerations. In about 10 per cent of the cases bacteriological examination of the throat has revealed fusospirochetes. The most important findings are those of the blood examination. The leucocytes decrease toward death to from 1500 to 100 per cubic millimeter. The granulocytic cells decrease first and may disappear entirely. Immature forms are not present but degenerative forms may be found. The monocytes may be temporarily increased. The erythrocytes thrombocytes and hemoglobin and the coagulation and bleeding times are normal or show only slight changes. The Widal and Wassermann reactions are unchanged. Blood cultures are positive in only about 10 per cent of the cases. The organisms found are variable.

The necrosing process may vary from a few spots in the mouth to deep gangrenous destruction of the esophagus and larynx. On microscopic examination the ulcers are seen to have three layers: (1) a necrotic top layer (2) a necrotic layer extending into the muscles in which the cellular outlines are still preserved and there are streaks of bacteria thrombosed vessels and clotted blood but no leucocytes and (3) an edematous layer of living and necrotic tissue.

Hemorrhages and exudate are found in the lungs pleura heart and pericardium. The absence of leucocytes in these foci is remarkable. In the deepest tract ulcers are frequently present. The liver may show enlargement cloudy swelling fatty

degeneration and multiple foci of necrosis. A minor swelling of the spleen is common. The lymph nodes especially those in the region of the involved area show enlargement with atrophy of the follicles and proliferation of the reticulo endothelial cells.

The disease occurs more frequently in women than in men and is most common between the thirtieth and fiftieth years of age. It is apparently not contagious.

Temporary improvement has followed repeated large transfusions and recovery has sometimes resulted from the use of a poly valent anti streptococcus serum and stimulating doses of X ray irradiation to the long bones.

The condition has been ascribed to endocrine disturbance. By some it is believed to be related to acute leukemia. According to the theory most generally accepted it is an infectious process.

In the diagnosis it must be differentiated from (1) diseases showing agranulosis and oral necrosis such as influenza and typhoid septicaemia, acute leucopenic leukemia and aleukemia (Ehrlich) (2) conditions showing agranulosis but no oral necrosis such as abdominal Hodgkins disease, pernicious anemia, miliary tuberculosis and arsenic and benzene poisoning and (3) diseases with oral necrosis but without agranulosis such as diphtheria, Vincent's angina and monocytic angina (Schultz). Influenza and typhoid differ in their course, bacteriology and pathology. Acute leucopenic leukemia is characterized by a hemorrhagic diathesis, secondary anemia, thrombopenia and lengthened bleeding time. Diphtheria may closely resemble essential agranulocytosis but differs in its hematological, bacteriological and pathological characteristics. Monocytic angina (Schultz) occurs in younger persons and is characterized by necrosis restricted to the tonsils, an increase in the white cells and an increase in the monocytes from 6 to 78 per cent. It is contagious and seldom fatal.

JAMES B. BROWN, M.D.

Birkhaug, K. E. The Etiology of Erysipelas. *Ann Int Med* 19 8 11 524

Birkhaug first reviews the clinical history of erysipelas. He reports that in 90 per cent of cases of this condition he has isolated a specific type of streptococcus hemolyticus. The organism was identified by agglutination, agglutinin absorption and animal protection tests. In experiments on rabbits erysipelas invariably developed when the organism was applied to the skin. Immune erysipelas serum protected susceptible animals against the localized erysipelas and the septicaemia which are ordinarily induced by intravenous injections of streptococcus erysipelas. With the isolated toxins skin reactions similar to those of the Schick and Dick tests were elicited. Antitoxic principles which neutralized the specific toxins were found in the blood serum of patients with erysipelas.

An erysipelas antitoxin which was made for clinical use gave very good results especially when

it was employed during the first three days of the infection. Of sixty eight susceptible persons who were treated with this antitoxin to increase their immunity only one had a recurrent attack of the infection.

WILLIAM A. BRAMS, M.D.

Jacobson, H. P. Coccidioidal Granuloma. *California & West Med* 1928 xxxix 392

Jacobson discusses the treatment of coccidioidal granuloma with colloidal copper and reports four cases bringing the total number of cases now on record up to ninety two.

The author's first case was that of an acutely ill negro thirty nine years old who had several fluctuating masses below the left clavicle and sternal region from which pus containing the coccidioides immitis was aspirated. Marked improvement followed four injections of colloidal copper.

In Case 2 injections of colloidal copper reduced a coccidioidal mass in the ankle and wrist.

In Case 3 there were subcutaneous abscesses which were especially numerous in the supraclavicular and sternal regions. No improvement resulted from the copper treatment. Autopsy revealed a generalized coccidioidal granulomatosis.

In Case 4 there were abscesses on the backs of both hands which showed marked improvement under treatment.

The manner in which the copper acts is not known. However as favorable results apparently depend upon a cumulative effect the injections must be administered regularly and over a long period of time. One of the author's patients had a relapse after the treatment had been discontinued for four months.

In spite of the virulence of the organism there are no recorded instances of direct transmission of coccidioidal granuloma from person to person or from animal to animal. In studies on guinea pigs made to determine the manner in which the condition is transmitted the author found that the animals did not develop the disease when they were fed food that had been exposed to infection by infected animals or when they were themselves exposed to contact with infected animals.

Jacobson believes that an intermediate host—probably an insect—is responsible for the transmission of the condition as in all of his patients the disease began with an insignificant papule or edematous congestion on an exposed part of the body which may have been an insect bite.

HARRY C. SALTZSTEIN, M.D.

## EXPERIMENTAL SURGERY

Poulton, E. I. An Experimental Study of Certain Visceral Sensations. *Lancet* 1928 ccxv 1223

In the author's experiments a toy balloon was introduced into the esophagus and inflated with air by means of a catheter. A T tube allowed the connection of a manometer with a kymograph and a water reservoir to supply variations in pressure

within the rubber bag. On filling the bag became fusiform and the pressure measured indicated the pressure within the oesophagus.

Visceral pain was found to be due to stretching with consequent deformity of the nerve endings in the walls of the viscus. This accompanied a rise in the diastolic pressure or tone of the viscus. If the posture was increased so that the bag could be more readily accommodated pain sensation ceased. During systolic contraction the pressure in the bag sometimes increased but the tension on the nerve endings fell because the diameter of the viscus decreased. Pain was absent but recurred as the wave passed and the diameter of the bag again increased.

This phenomenon was further established when two rubber bags were introduced into the oesophagus, one above the other and compressed in turn by each peristaltic wave. The waves were not the result of swallowing and were unnoticed by the patient, an example of secondary peristalsis. In further experiments a barium-coated bag placed in the lower oesophagus was inflated with water to a pressure of 40 cm. and a rubber bag was placed above it to record the passing of peristaltic waves. Pain was felt at once and was most severe during contractions. During swallowing the pain became worse and there was a contraction wave lasting twenty-seven seconds. When the rubber bag was placed below the incompressible bag pain was noticed as before but the lower bag recorded only an increase in diastolic pressure with no peristaltic waves. This was not due to compression of its tube as normal respiratory variations were noted. The author explains increased pain during peristalsis by the fact that the diastolic pressure remained constantly at 40 cm. except during the middle of the wave when it was relieved for an interval by the contraction of the muscular walls.

Similar findings were made in the case of the stomach. Many clinical cases of gastric and duodenal ulcer were studied with special reference to the production of pain by the presence of gastric contents injected into the oesophagus in which no pain was produced. Visceral pain is an affair of the whole visceral wall and not an isolated part of it and peptic ulcer produces painful effects secondarily

by causing a reflex increase in tone. The author's findings and those of other investigators seem to show that a direct peristaltic action relieves visceral pain but that the pain recurs when the tension on the nerve endings becomes re-established during peristaltic relaxation. WILLIAM J. PICKETT M.D.

Emerson W. C. The Effect of Ether Anesthesia and Shock on the Calcium of the Blood. *J. Lab. & Clin. Med.* 1918 xiv 195

Emerson studied the effects of ether anesthesia, asphyxia, pulmonary hyperventilation and shock on the serum calcium of dogs and concludes as follows:

1. There is an increase of 18 per cent in the serum calcium of the blood following ether anesthesia.

2. There is an increase of 20 per cent in the serum calcium of the blood following asphyxia.

3. There is a slight decrease in the serum calcium of the blood following anesthesia with hyperventilation.

4. A slight amount of asphyxia during ether anesthesia is of value as it tends to raise the serum calcium content of the blood and thereby shorten the coagulation time.

5. Shock has no effect upon the serum calcium of the blood. JACOB M. MORA M.D.

#### HOSPITALS, MEDICAL EDUCATION AND HISTORY

MacEachern M. T. How Social Service Supplements Treatment. *Med. Hosp.* 1918 xiv 69

The primary function of the social service department of a hospital should be to assist the doctor in the scientific care of the patient through medical-social case study. Its secondary functions should be to assist the administration of the hospital to a better understanding of the social conditions of the patient, induce the patient to continue treatment, relieve the patient of physical and mental worries, cooperate with the public health authorities in promoting better community relations and cooperate with schools of nursing and universities in the education of the student nurse and social worker.

J. FRANK DOUGHERTY M.D.

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### Ear

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within the rubber bag. On filling the bag became fusiform and the pressure measured indicated the pressure within the esophagus.

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J. FRANK DOUGHERTY M.D.

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*Supplementary to*

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Editorial Communications Should Be Sent to Franklin H Martin Editor 54 East Erie St Chicago  
Editorial and Business Offices: 54 East Erie St Chicago Illinois U S A  
Publishers for Great Britain: Bailliere Tindall & Cox 8 Henrietta St Covent Garden London W C





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## EDITOR'S COMMENT

MILLER'S comprehensive study of 343 cases of intestinal obstruction treated at the Charity Hospital and the Touro Infirmary at New Orleans (p. 528) is another helpful contribution upon a subject of universal interest and ever increasing importance. In his clear cut presentation of the clinical picture the author emphasizes the importance of pain as a cardinal symptom; he points out again the fact that constipation and distention are absent in one half of the cases and states that of the cases reviewed none presented all the classical symptoms. An interesting finding in the series reviewed was that the mortality following operations performed under local anesthesia was 30 per cent higher and the mortality following operations performed under spinal anesthesia 20 per cent higher than that following operations under general anesthesia. The author does not, however, indicate whether local and spinal anesthesia were used predominantly in the cases of patients seen late in the course of the disease and those of patients who were considered poorer surgical risks.

Wilkie's views as to the indications and value of gastro-enterostomy (p. 527) are clearly set forth in a recent paper in SURGERY, GYNECOLOGY AND OBSTETRICS (Jan. 1929, p. 79). Essentially he agrees with the views expressed by Moynihan, one of whose recent papers was reviewed in the last issue of the ABSTRACT (May 19, p. 432). As is well known, the conservative stand which Moynihan, Wilkie, Paterson and other British surgeons have persistently maintained with reference to the surgical treatment of gastric ulcer and more particularly of duodenal ulcer is in rather marked contrast with the trend toward radical resection so pronounced on the Continent. If a sufficient number of the many patients who have undergone radical resection in the past decade can be followed for a ten and fifteen year period, we may soon have definite criteria by which to judge the comparative value and effectiveness of the different methods of surgical treatment which have been advocated for the cure of gastric and of duodenal ulcer.

In this connection Galli and Polacco's experimental investigation of the results of Latarjet's

method of gastric denervation and of Schiassi's method of division of the vagi and sympathetic fibers of the stomach (p. 526) is of interest. A certain percentage of the dogs which were subjected to extensive denervation operations developed gastric ulcers demonstrable by the X-ray and proved at necropsy.

An interesting paper on meningeal hemorrhage in the newborn with a discussion of the important etiological factors (Pigeaud, p. 542) and another reviewing the facts in four cases of meningeal hemorrhage following spontaneous delivery (An derodias and Derville, p. 542) are abstracted in the section devoted to obstetrics. It is of interest that among thirteen cases of meningeal hemorrhage found by Pigeaud at autopsy, six followed spontaneous and normal labors. Of the thirteen cases, four showed lesions of congenital syphilis; in four others the diagnosis of syphilis seemed certain; in only three cases was death attributed to the traumatism of labor. In autopsies performed on fetuses of four or five months with the membranes intact, Pigeaud found meningeal hemorrhage in six cases.

Tumors involving glands of internal secretion and giving rise to symptoms resulting from the excessive secretion of such glands are being recognized with increasing frequency. Hick's report of a case of adenoma of the adrenal cortex associated with marked pigmentation but not in this case with virilism (p. 544) is an interesting addition to the group of cases. Cappel's report of a case of retroperitoneal ganglionic neuroma successfully removed (p. 520) is also of unusual interest.

Howes, Sooy and Harvey's experimental studies of the rate of healing of incised wound in skin, fascia, muscles and stomach (p. 560), Kleinberg's report of the results of operative fusion of the spine in structural scoliosis (p. 556), Lindquist's report of four cases of abscess of the liver following appendicitis (p. 532), Hellstrom's report of two cases of choleic acid enteroliths (p. 531) and Graham's discussion of the significance of changed intrathoracic pressure (p. 525) are only a few of many other interesting abstracts in this month's issue of the ABSTRACT.

# INTERNATIONAL ABSTRACT OF SURGERY

JUNE 1929

## LANDMARKS IN SURGICAL PROGRESS

IRVING S CUTTER M.D. Sc.D. CHICAGO  
Dean of the University of Illinois School

### EXTIRPATION OF THE PAROTID—GEORGE McCLELLAN

THE early years of Jefferson Medical College were enlivened by an occasional tilt between a certain faculty member of that school and a representative of the older school of the Medical Department of the University of Pennsylvania. Shortly after Granville Sharp Pattison assumed the professorship of anatomy at Jefferson (1832) the students of that school by means of a letter formally called his attention to the fact that the Professor of Surgery in the University of Pennsylvania Dr William Gibson in a lecture delivered late in the year 1832 denied that the parotid gland had ever been extirpated. To the students and faculty of Jefferson this was *lese majesté*. The founder of Jefferson Dr George McClellan had already reported several cases of extirpation of the parotid and this surgical triumph had been set up as one of the household gods of the Jefferson student body. The letter to Professor Pattison was dated January 1, 1833 and concludes:



(GEORGE McCLELLAN  
(1833-1841))

We the students of Jefferson Medical College feeling the honour of our Professor (McClellan) involved and the credit of our Institution concerned

in the fact being fully established would feel obliged to you if you would enter into a discussion of the question *Has the Parotid Gland ever been extirpated?*

One may wonder whether the letter emanated spontaneously from the student body or had been inspired by others and designed to stimulate Pattison's polemic proclivities. At any rate Pattison took the cue and the result was the lecture cited.

Pattison on the death of his teacher Allan Burns of Glasgow succeeded to his master's chair in 1813. He was a popular and fascinating lecturer and was regarded by the students as the best teacher of anatomy in Glasgow. He is reported to have spoken with a lisp although his language is described as fluent and impressive. He had edited Burns' *Surgical Anatomy of the Head and Neck* to which he prefixed a life of that distinguished anatomist and had been more or less steeped in the doctrine enunciated by Burns who said of the parotid:

Its extirpation is quite out of the question. On the dead subject I have attempted the extirpation of such tumours (of the parotid) but even there

Lectured by Dr. J. S. Cutter, M.D., Sc.D., Chicago, Ill., June 1929. Published by the International Association of Surgeons, Philadelphia, 1929.

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## EDITOR'S COMMENT

MILLER'S comprehensive study of 343 cases of intestinal obstruction treated at the Charity Hospital and the Touro Infirmary at New Orleans (p 528) is another helpful contribution upon a subject of universal interest and ever increasing importance. In his clear cut presentation of the clinical picture the author emphasizes the importance of pain as a cardinal symptom. He points out again the fact that constipation and distention are absent in one half of the cases and states that of the cases reviewed none presented all the classical symptoms. An interesting finding in the series reviewed was that the mortality following operations performed under local anæsthesia was 30 per cent higher and the mortality following operations performed under spinal anæsthesia 20 per cent higher than that following operations under general anæsthesia. The author does not, however, indicate whether local and spinal anæsthesia were used predominantly in the cases of patients seen late in the course of the disease and those of patients who were considered poorer surgical risks.

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In this connection Galli and Polacco's experimental investigation of the results of Latarjet's

method of gastric denervation and of Schiassi's method of division of the vagi and sympathetic fibers of the stomach (p 526) is of interest. A certain percentage of the dogs which were subjected to extensive denervation operations developed gastric ulcers demonstrable by the X-ray and proved at necropsy.

An interesting paper on meningeal hemorrhage in the newborn with a discussion of the important etiological factors (Pigeaud p 542) and another reviewing the facts in four cases of meningeal hemorrhage following spontaneous delivery (Andersson and Derville p 542) are abstracted in the section devoted to obstetrics. It is of interest that among thirteen cases of meningeal hemorrhage found by Pigeaud at autopsy six followed spontaneous and normal labors. Of the thirteen cases four showed lesions of congenital syphilis; in four others the diagnosis of syphilis seemed certain; in only three cases was death attributed to the traumatism of labor. In autopsies performed on fetuses of four or five months with the membranes intact Pigeaud found meningeal hemorrhage in six cases.

Tumors involving glands of internal secretion and giving rise to symptoms resulting from the excessive secretion of such glands are being recognized with increasing frequency. Hick's report of a case of adenoma of the adrenal cortex associated with marked pigmentation but not in this case with virilism (p 544) is an interesting addition to the group of cases. Cappel's report of a case of retroperitoneal ganglionic neuroma successfully removed (p 520) is also of unusual interest.

Howes, Sooy and Harvey's experimental studies of the rate of healing of incised wounds in skin, fascia, muscles and stomach (p 569), Kleinberg's report of the results of operative fusion of the spine in structural scoliosis (p 536), Lundquist's report of four cases of abscess of the liver following appendicitis (p 532), Hellstrom's report of two cases of choleic acid enteroliths (p 531) and Graham's discussion of the significance of changed intrathoracic pressure (p 522) are only a few of many other interesting abstracts in this month's issue of the *ABSTRACT*.

In all three of McClellan's cases as reported the patients recovered each showing however, a facial paralysis.

No sooner had Pattison's discourse been published than there appeared in the *Transylvania Medical Journal* (1832) a communication from Frederick E. Beckton of Murfreesborough Tennessee calling Professor Pattison's attention to the fact that the parotid gland had been extirpated in January or February of 1823—three years prior to McClellan's first operation—by John Beale Davidge at the time Professor of Anatomy in the College of Medicine of Maryland in Baltimore. This case was reported in the *Baltimore Philosophical Journal and Review*.<sup>1</sup> The operation from which the patient fully recovered was performed in the presence of two Baltimore physicians Dr Solomon Birckhead (1761-1836) and Dr Thomas Wright (?-1856) and two of the operator's pupils. To the communication of Beckton Pattison replied that he was unaware of the operation performed by Davidge and promising due credit to that operator in his forthcoming work on surgery.

As far as can be determined Pattison's lecture cites the major number of published parotid operations. He does not include that of John Warren (1753-1835) described by his son John Collins Warren (1778-1856) who says in his *Surgical Observations on Tumours*.<sup>2</sup>

The scirrhus state of the parotid being incurable by remedies a surgical operation is the only resource an operation requiring some degree of skill and knowledge of anatomy.

The first operation of this kind I recollect to have witnessed was performed by my late father in the year 1804. The patient was a lawyer from Maine thirty years old of good constitution and altogether a favorable subject. The tumour was large, hard, painful and of a conical form. It was removed without the division of the carotid artery. The facial nerve was divided and the muscles of the face partially paralysed for some years. This paralysis gradually diminished and I believe had quite disappeared before the death of the patient which took place about fifteen years after the operation from some cause not connected with the disease nor operation.

Agnew<sup>3</sup> gives the date of Warren's operation as 1798. He further states that this operation pioneered the way for those of later operators.

Apparently no report of John Warren's operation was published until the work of John Collins Warren above mentioned hence the operation could not have served as Agnew indicates. Agnew further states that McClellan of Green castle, Franklin County Pennsylvania removed the parotid in 1805 that White of Hudson New York performed the same operation in 1808 and that Sweat of Maine removed the parotid three times between 1811 and 1841. Sweat's cases were not reported until 1851 when his article appeared in the *New York Journal of Medicine*.<sup>4</sup> His first case was operated in 1811 the second in 1814 and the last in 1841. All resulted in recoveries including several cases mentioned but not detailed.

From the foregoing one may visualize the serious contentions among surgeons on a surgical point that would today be settled by experimental evidence. Few extirpations of the parotid were performed and of these the case of John Warren appears to hold American priority in performance only. Many of the operations were not published until a generation or more later when as guides to surgical procedures their descriptions would have become useless. George McClellan however not only performed the operation successfully many times but published his results promptly and through his surgical lectures widely disseminated knowledge of the operation. His eleven cases with ten recoveries clearly established surgical removal of the parotid as feasible and practical and to him for repeated successful operations of like character history must yield acclaim.

George McClellan was born at Woodstock Connecticut on December 23 1796. In 1812 he entered the sophomore class at Yale College, graduating with honors in 1815. In 1817 he attended lectures at the University of Pennsylvania later as has been related entering the office of Dr John Syng Dorsey as a private pupil. He was known as a brilliant student unusually keen for the time on physiological and pathological studies. Between 1820 and 1826 he taught private classes in anatomy and surgery. In 1826 he founded Jefferson Medical College a move that rendered him anything but popular with the profession of Philadelphia as it was assumed that Philadelphia at the time could not support two schools of medicine. In 1838 the professorships of Jefferson were all vacated by action of the Board of Trustees and in the reorganization Dr McClellan's name was not

<sup>1</sup> *Transylvania Medical Journal* 1832. This article was published in the *Transylvania Medical Journal* 1832. The patient was a lawyer from Maine thirty years old of good constitution and altogether a favorable subject. The tumour was large, hard, painful and of a conical form. It was removed without the division of the carotid artery. The facial nerve was divided and the muscles of the face partially paralysed for some years. This paralysis gradually diminished and I believe had quite disappeared before the death of the patient which took place about fifteen years after the operation from some cause not connected with the disease nor operation.

<sup>2</sup> *Surgical Observations on Tumours*. New York, N.Y. 1856. Cases of Extirpation of Parotid Glands. Boston, W.C. C. & N.D. 1856. North Paris & Id. Maine.

have never succeeded in clearing away fully the diseased substance

John Bell had said :

The cutting out completely of the parotid gland is a thing quite impossible since the greatest of all the arteries viz the temporal and the maxillary lie absolutely imbedded in the gland

John Bell later revised his original doctrine in his treatise on surgery,<sup>2</sup> stating that he had often extirpated the diseased parotid and his brother Sir Charles Bell says that he had assisted John in the extirpation of the gland Burns contended however from the case reports of John Bell that he had extirpated only the lower lobe of the parotid

William Gibson<sup>3</sup> the offending lecturer was born in Baltimore in 1783 attended Princeton and medical lectures at the University of Pennsylvania In 1807 he journeyed to Europe and became a student of John Bell in Edinburgh receiving his M.D. degree in 1809 Later he was a private pupil in the family of Sir Charles Bell in London He returned to America in 1810 and began the practice of medicine in Baltimore, assuming the Chair of Surgery in the University of Maryland in 1812 Upon the death of John Syng Dorsey in 1818 and the transfer of Philip Syng Physick to the Chair of Anatomy Dr Gibson was appointed in 1819 to the Chair of Surgery in the University of Pennsylvania While in Baltimore he was closely associated in the Maryland faculty with Dr John Beale Davidge (1768-1829) who later (1821) published an account of an operation in which he extirpated the parotid gland This operation had probably escaped Gibson's notice but should have been known to Pattison who for several years was a teacher in Baltimore having accepted in 1820 the chair of Surgery at the University of Maryland vacated by Gibson Pattison however does not mention Davidge's case in his address to the students of Jefferson When Pattison assumed the Chair of Anatomy at Jefferson he became perforce closely associated with Dr George McClellan and learned of the operations on the parotid performed by the latter Although contrary to the teachings of his master Burns McClellan's surgical achievements were fully accepted by Pattison and in his address he proved an able champion of McClellan's operative skill

There are numerous indications that Gibson had but a poor opinion of McClellan's surgical ability McClellan had not studied in Europe and he had been a friend and pupil, a hero worshipper of the late John Syng Dorsey who ere his untimely death had been going ahead in surgical Philadelphia quite too rapidly to suit certain members of the Pennsylvania faculty

Prior to the delivery of his address Pattison had evidently searched the literature with considerable care After indulging in sarcastic comments on an alleged quotation from the offending lecture of Professor Gibson he cites numerous instances of parotid removal among others Heister in 1733 Siebold 1781 Abernethy and Goodland 1815 Carmichael 1818 Beclard 1824 Gensoul 1824 and 1826 and Lisfranc 1826 He gives considerable space to the first case reported by Dr George McClellan which was performed in 1826<sup>4</sup> He says

The first case in which Dr George McClellan operated was one which would have deterred a man of less energy of mind and professional eminence from attempting the operation The subject of it, Dr Graham a gentleman at present highly respected in his profession in the city of New York was at the time the operation was executed a medical student in Philadelphia The tumour was large and its anterior face was marked by a cicatrix left from a former operation in which from the difficulties which met the surgeon in his attempt to extract it he was induced to desist My friend's boldness—a boldness resting on his knowledge of Surgical Anatomy was not to be daunted by the failure of a previous operation He was confident that the operation might have been and still could be successfully executed He assured the patient that his confidence as to its practicability was so strong that he was himself prepared to undertake it He did perform the operation and thus established the justness of his opinion and saved the life of a valuable Member of the Profession There is a comfort and a consolation in the recollection and assurance of this fact Gentlemen which neutralizes the poison of all calumny and misrepresentation Dr Graham is still alive and in good health and having since the operation visited Europe and been examined by Sir Astley Cooper and the late Sir Abernethy those distinguished surgeons have unhesitatingly declared that no doubt can exist as to the whole gland having been removed But their declaration to this effect was unnecessary I shall only ask any unprejudiced person to prove my friend's description of the appearance presented by the wound immediately after the operation and then ask their own mind if a single doubt as to the whole gland having been extirpated in this case can remain

<sup>1</sup> J. B. Bell An. my Vol II 503

<sup>2</sup> J. B. Bell Principles of Surgery Vol II 210

<sup>3</sup> 1768-308 Hasb. st. k. w. surgical t. buton in appar. thy. the sal. p. e. mance. f. a. c. r. a. an. s. e. t. u. r. c. p. o. th. s. e. m. i. n. e. d. v. d. f. t. h. a. s. e. w. a. s. r. e. p. o. r. t. e. d. b. y. J. C. N. a. n. d. A. m. J. M. S. e. Aug. 1835

American Medical Review and Journal Vol. 12, 1835

# ABSTRACTS OF CURRENT LITERATURE

## SURGERY OF THE HEAD AND NECK

### HEAD

Dufourmental and Darciassac. An Attempt to Treat Inferior Retrognathism (Essai de traitement du retrognathisme inferieur) *Bull et mem Soc d chirurgiens de Par* 1928 **xx** 750

Many forms of retraction of the lower jaw can be corrected by orthodontic treatment but few attempts at surgical correction have been made when orthodontic procedures were not applicable.

Temporomandibular ankylosis in infancy may cause the most marked forms of retrognathism with atrophy of the bone and retrusion of the chin. In 1924 the authors described two operations for widening the arch of the lower jaw: (1) median osteotomy with the introduction of a bone graft and (2) staircase osteotomy followed by separation of the two halves without the use of a bone graft.

In another operation performed at that time on the cadaver, cuneiform resection through the full thickness of the jaw was done in both the cuspid and bicuspid regions and the incisive fragment allowed to drop back. It was believed however that the mutilation resulting was too great and the viability of the fragment too questionable to warrant the application of the operation to the living.

In one case the authors resected the protruding superior maxilla at the expense of the anterior teeth and replaced the teeth with an artificial denture. To increase the correction an operation was done on the joints, the external lateral ligament being cut and a piece of the eighth costal cartilage being inserted behind the condyle. The uncut external pterygoids tended to hold the jaw forward. Dislocation will not occur after this procedure. According to Ferabert and Seblau, the joint surface of the glenoid is about five times greater than that of the condyle. In the author's case, improvement in function was of more importance than improvement in contour. Mastication which was scarcely possible before the operation was quite normal following the intervention. The X ray showed the condyle to be well forward. The cartilage was not clearly distinguished but seemed to be continuous with the posterior part of the condyle.

JAMES B. BROWN, M.D.

### EYE

Duke Elder W. S. and Duke Elder F. M. A Histological Study on the Action of Short Waved Light upon the Eye with a Note on Inclusion Bodies. *1st J Ophth* 1928 **xii** 1

The clinical and histological appearances of the abiotic reaction to light as seen in the cornea con-

junctiva, iris, lens and retina are the same in kind although varying in degree. The most interesting and characteristic changes are the oxyphil degeneration affecting the nuclear chromatin which may go on to the formation of acidophil granules or of granular or homogeneous nuclear inclusions. Originally intra-nuclear these may be extruded into the cytoplasm with disintegration of the nuclei, a process which may culminate in death and disintegration of the cell. The reaction is characterized by intense vascular engorgement where that is possible and is followed by rapid regeneration and resolution in which the absence of karyokinetic activity is notable.

The general abiotic reaction is based on photochemical denaturation affecting the proteins of the cells.

Two separate actions are demonstrated in the lens: the first affecting the capsular and subcapsular epithelium and the second affecting the lens substance. The authors conclude that in common with other regions of the energy spectrum, ultraviolet radiations are a factor in the etiology of cataract.

The subcapsular wall has an appearance similar to that of the corneal epithelium. Definite abiotic changes in the retina affecting mainly the ganglion cells and inner nuclear layer consist essentially of a chromatolysis and a tendency to stain readily with acid dyes. The authors therefore conclude that they are a pathological intensification of physiological processes of vision rather than a direct abiotic response.

An analogy between the nuclear appearances of abiotically traumatized tissue and the inclusion bodies occurring in the lesions caused by herpetic and other viruses and possibly also in trachoma tends to support the opinion that these appearances are degenerative in nature and non specific in origin.

LESLIE L. MCCOY, M.D.

### EAR

Drury D. W. Syndrome Complexe Meniere. *New England J Med* 1929 **cc** 173

The author reports in detail 3 cases of the Meniere syndrome of endocrine origin and 1 case not of endocrine origin. In the former there was thyroid insufficiency and all of the symptoms disappeared on the administration of thyroid extract. In the case which was not of endocrine origin improvement resulted under general care.

The author believes that in cases without symptoms of dysfunction the cause lies in a general systemic disturbance. In 500 cases of endocrine origin

included. He promptly set about the organization of an entirely new faculty, obtaining a charter for the Medical Department of Pennsylvania College at Gettysburg. In this new school lectures were commenced in Philadelphia in November 1839, with nearly 100 students in attendance.

His *Principles of Surgery*,<sup>1</sup> unfinished at the time of his death, was completed by his son<sup>2</sup> and

contains records of many novel and original surgical procedures.

Another son, General George B. McClellan, gained distinction in the early part of the Civil War and later became largely identified with railroad engineering and management.

Death suddenly claimed George McClellan on May 8, 1847.

<sup>1</sup> G. & M. C. H. P. 1846. 18. 27. Philadelphia. 245.

D. J. H. B. M. C. H. 18. 274.

a half years) is still too short as the majority of school children six or seven years of age have not been under the continuous influence of iodine

According to Swiss statistics the incidence of palpable goiter in the newborn is lower when the mothers receive iodized salt (1 mgm. of potassium iodide to 1 kgm. of sodium chloride) during pregnancy. Few injurious effects from iodized salt have been observed in Switzerland although prophylaxis is obligatory in six cantons

A comparison of the statistics for 1923 and 1927 for Viennese school children reveals a distinct decrease in juvenile goiter. The decrease has been particularly marked in the severe struma, the incidence of which has dropped from 1.6 to 0.16 per cent. As the consumption of iodized salt in Vienna amounts to only 47 per cent of the total consumption of table salt, only half of the children in Vienna have been under the influence of iodine during the last three and a half years. Reports from other provinces are similar. The number of operations for goiter performed in Vienna has also shown a marked decrease, the total number in 1926 being only 61 per cent of the total number performed in 1922.

ERLICH (2)

Eldh S. M. A Contribution to the Study of the Basal Metabolism in Goiter at Puberty. *Acta med Scand* 1928 lxx 286

Not much attention has been paid to the basal metabolism in goiter at puberty and the clinical picture of such goiter is not clearly defined. Not infrequently the diagnosis of exophthalmic goiter is made even in cases of diffuse (colloid) goiter with more or less prominent but often rapidly passing symptoms suggesting hyperthyreosis.

The parenchymatous form of goiter increases in frequency at the time of puberty. In association with it there are generalized cardiovascular disturbances due to increased glandular function leading to Kropf or Basedow's disease. Even in cases of marked goiter symptoms due to loss of function of the gland which has become enlarged through degeneration may be lacking.

Wegelin makes a distinction between diffuse and nodular goiters. The diffuse goiter may be either a Basedow goiter with diffuse hyperplasia or a diffuse colloid goiter which cannot be differentiated histologically from a normal gland. The diffuse colloid goiter usually occurs in adolescence and often disappears spontaneously between the ages of twenty and thirty years.

Holmgren in 1909 was the first to show that the syndrome of goiter and tachycardia in adolescent girls is usually coincident with an increase in height. In cases of goiter and tachycardia occurring in adolescence which were studied by him the increase in height averaged 5 cm. whereas in cases in which the symptoms developed after adolescence the proportions were normal.

According to Holmgren's description girls with hyperthyreosis at puberty are usually tall, lively and

nervous and suffer from goiter, tachycardia and tremor. As a rule they have a fair complexion, shining eyes, abundant hair and an intelligence above the average. They menstruate and mature early.

In a description of goiter at puberty Hutinel said that the size of the thyroid gland steadily increases until adult age, the increase being particularly marked at puberty. This development may lead to pathological changes, but as a rule the enlargement soon disappears, leaving the neck a little thick. There are no pains, inflammatory reactions, adventitious vascular sounds or nervous phenomena. The gland is soft and elastic. The hypertrophy is too slight to be called goiter.

Sometimes, however, there is a true parenchymatous goiter. This may diminish in size and yet cause persistent symptoms. There is no definite relationship between the size of the goiter and hyperthyreosis.

More or less pronounced Basedow's disease is characterized by prominence of the eyes, a large thyroid with well marked veins, nervous and psychical features, cardiovascular symptoms and frequently emaciation.

Girls with hypofunction of the thyroid have puffy features, cold and cyanotic extremities and a dull expression. They are slow in their movements, indolent and not very tall.

In examinations of school children in Finland Kaartinen found goiter in 18.6 per cent. The goiters reached their greatest size and frequency at the age of thirteen years.

Earlier investigations of the basal metabolism in cases of goiter at puberty were carried out in only a few cases and by different methods, the results being therefore difficult to evaluate. In four cases of diffuse goiter in girls at puberty H. Doubler found the metabolic rate to be normal. In none of these were there true symptoms of hyperthyreosis, but in one of them the histological picture was that of Basedow goiter.

Moller reported six cases of goiter diagnosed as the Basedow or forme fruste type and five diagnosed as simple goiter. Only two of the Basedow or forme fruste type had an increased metabolic rate. In none of the cases were there any other symptoms and in two there was no tachycardia or increase in perspiration. The symptoms were therefore very much like those not infrequently occurring in girls at puberty and soon disappearing.

Gardner, Hill, Brett and Forrest Smith find the colloid goiter to be the usual form at puberty.

One cause of the conflicting data is the difference of opinion as to how the individual case should be classified with reference to the character of the goiter and other clinical features. Another is the variety of apparatus used and the difference in the methods employed in the calculation of the basal metabolic rate.

The author studied nineteen cases of goiter at puberty and the laboratory records of twenty-one others. Krogh's method was used and in the



which he studied the symptoms were always found to be due to hyposfunction rather than hyperfunction

GEORGE R. McALISTER M.D.

About 90 per cent of the cases clear up if ventilation is established and proper after treatment is given

GEORGE R. McALISTER M.D.

## NOSE AND SINUSES

Hansel T. K. Malignant Tumors of the Nasopharynx *Arch Otolaryngol* 1929 12 12

Malignant tumors of the nasopharynx produce such a great variety of symptoms that they should be of interest to the surgeon internist neurologist oculist and otolaryngologist. While they are invariably located in the fossa of Rosenmueller they quickly invade adjacent structures so that fully 50 per cent of the symptoms are of extranasal origin. Such symptoms are variable depending upon the structures invaded. All of the cranial nerves are affected but the sixth nerve is involved most frequently.

The diagnosis is often difficult because of the small size of the primary growth and the absence of nasopharyngeal symptoms but the condition should be suspected in every case of unexplained palsy or irritation of the cranial nerves and in cases of enlarged cervical glands.

The tumors are so highly malignant that palliative treatment with radium or the X-ray offers only a grave prognosis.

The author has seen twelve cases and cites four others in which the clinical picture was dominated by extranasal symptoms. GEORGE R. McALISTER M.D.

Reaves R. G. A Comparative Study of Chronic Sinusitis with End Results Following Intranasal Operations *Arch Otolaryngol* 1929 12 23

The author reports a study of cases of chronic sinusitis which he divides into three groups: (1) those of the chronic suppurative type, (2) those of the chronic hyperplastic type, and (3) those with polypoid degeneration of the mucosa. The studies included the chief complaint, the history, and the findings of inspection, transillumination, X-ray examination and laboratory tests. The classification cannot be exact as there may be a combination of conditions but when pus is present in great quantity a diagnosis of the suppurative type of sinusitis is made. In hyperplastic sinusitis headache is frequent and often of the vacuum type accompanied by soreness back of the eyeballs. Polypoid degeneration is often accompanied by a watery discharge and sneezing, anosmia, bronchitis and asthma.

Active treatment is surgical. Its object is to establish ventilation and drainage. The work is done intranasally under local anesthesia. The author begins by opening the antrum. He next opens the posterior ethmoids with a Sluder knife followed with the use of suitable punches, and then the sphenoid. If the frontal openings are too small they are enlarged with rasps.

The postoperative treatment lasts from seven to ten days and consists in painting the operative field with mercurochrome and irradiating it with quartz ultraviolet rays.

## MOUTH

Cade S. Radium Therapy of Cancer of the Buccal Cavity *Lancet* 1929 ccxvi 8

Primary cancer of the tongue can be made to disappear by means of radium in a large proportion of cases. The treatment depends upon the selective action of the gamma rays upon the newly developed cells. The more rapidly the tumor grows the more sensitive it is to the gamma rays.

In cancer of the buccal cavity one of the following three methods of irradiation are used depending upon the anatomical site of the lesion:

1. Interstitial irradiation by the use of radium needles around the tumor. This is most suitable for small and easily accessible tumors.

2. The cavity method in which the requisite amount of radium is carried by a vulcanite denture lined with lead. This method is used for cancer of the palate, uvula and cheek. The denture may be worn continuously or intermittently.

3. The surface application of Columbia paste. This method is employed for secondary cervical involvement.

The primary treatment by radium is usually followed two or three weeks later by treatment of the lymphatic areas by surgery or radium or both.

The author discusses the technique of applying radium in various locations and reports a few cases.

CHARLES W. FREEMAN M.D.

## PHARYNX

Mangabeira Albernaz P. The Etiology and the Etiological Treatment of Plaut Vincent Angina *Laryngoscope* 19 9 2212, 1

The author states that Plaut Vincent angina is a pharyngeal localization of fusospirochaetosis.

This disease is produced by the association of the fusiform bacillus of Le Dantec with a spirochete which may be called Vincent's spirochete in default of an exact microbiological classification.

In the treatment the use of bismuth or the arsenofenzols is indicated. Bismuth is less toxic, more powerful and more economical than the arsenofenzols and is immediately and certainly sedative allaying the pain.

JAMES C. BRASWELL M.D.

## NECK

Wagner Jauregg J. Preliminary Report on the Results of Gouter Prophylaxis (Vorläufiger Bericht über Erfolge der Kropfprophylaxe) *Wiener Medizinische* 1928 xli 833

For final conclusions regarding the success of efforts at gouter prophylaxis, statistics must be collected from regions in which the use of iodized salt is obligatory. The period of observation (three and

that in 9 the nodule resembled a true benign parenchymatous neoplasm but did not participate in the hyperplasia present in the surrounding tissue. In 34 per cent the nodules were due to colloid cysts. As all of this group were cases of long standing the change was attributed to over involution during spontaneous remissions or after iodine treatment. Hypertrophy and hyperplasia were present in the nodules and surrounding tissue. In 58 per cent of the cases there was a circumscribed hyperplasia with intervening areas of normal tissue. Therefore the nodules found in toxic goiters may be true adenomata overinvolved tissue or circumscribed areas of hyperplasia. Thyrotoxicosis with nodular goiter is considered a more accurate term than toxic adenoma.

Histologically the hyperplasia of hyperthyroidism is similar to the physiological hyperplasia of puberty differing mainly in being more marked. Hyperplasia may be present without Basedow's disease and Basedow's disease may be present without apparent hyperplasia. It must be remembered however that a very small hyperplastic area is capable of producing intoxication.

The iodine content of normal glands has been found to vary from 0.48 to 27 mgm. Bauman and Zeit reported the average to be 6.6 mgm. Oswald found the content of normal glands to vary from 0.48 to 23.6 while in 43 simple goiters the content ranged from 11.7 to 26.9 mgm. The colloid goiters had the largest amount the parenchymatous type had less and the adenomatous type had least. The total iodine was greater than the normal but the amount per gram of dried gland was less than the normal.

Colloid is essential for the storage of iodine. Marine found more iodine per gram of dried gland in cases of Basedow's disease than in those of colloid goiter indicating that iodine deficiency is not essential in hyperthyroidism.

Marine thinks the iodine content of the adenoma is less than that of the surrounding tissue. DeQuervain has seen adenomata with 3 times the amount of iodine in the surrounding tissue.

In studies of the effect of the administration of iodine on the iodine content of the gland Jansen and Robert found that without previous administration of iodine there was a relative iodine deficiency in hyperthyroidism with a slight increase in the total iodine content of the gland. After the administration of iodine the normal gland showed a relatively great increase in iodine while in simple goiter and hyperthyroidism there was a moderate relative and absolute increase.

Before the administration of iodine in colloid goiter the iodine content of the blood was 30 per cent of normal. In Basedow's disease it was 3 times the normal. There was no relation between the iodine content of the blood and that of the gland. These findings indicate that the Basedow type of gland is unable to store iodine because of excessive production of the thyroid hormone. After the administra-

tion of iodine the blood in simple colloid goiter showed a great increase in iodine indicating that excessive iodine in the blood is not responsible for the intoxication. Certain patients with colloid or adenomatous goiter who became toxic after administration of iodine did not show an increase in the iodine content of the gland. Others had an increase in the iodine content of the gland without an increase in the blood iodine. There seems to be a qualitative factor in the secretion which may or may not be iodine in nature.

Rienhoff supports Marine's view that the action of iodine in hyperthyroidism is a mechanical interference with the escape of the secretions into the circulation.

The thymus gland is frequently enlarged in patients with hyperthyroidism. Warthin believes that hyperthyroidism occurs only in persons with the so called lymphatic constitution and that an enlarged thymus is necessary.

Capelle found an enlarged thymus in 95 per cent of cases in which death followed an operation for hyperthyroidism in 82 per cent of cases in which death resulted from the disease and in 44 per cent of cases in which death resulted from intercurrent infection. Marine believes the thymic enlargement is secondary and part of the systemic reaction.

Garre reported a cure after thyrectomy and it is possible that some of the benefits of roentgen ray therapy are due to the effect of the irradiation on the thymus.

With regard to the pathological physiology there are many theories all speculative. In Krehl's opinion an individual predisposition is an important factor. According to Aschoff a hypersensitive nervous system is responsible for the individual predisposition and there is more than one active principle.

In Oswald's opinion the primary disturbance is in the epithelial cells of the thyroid which lose the ability to convert iodine into a form capable of being stored the result being a high iodine content of the blood rapid excretion of iodine from the body and iodine deficiency.

De Quervain believes there are multiple active substances. He refers to Kendall's experiment in which different effects were noted with acid soluble and alkali soluble substances and calls attention to the dissociation of symptoms in cretinism. The cardinal symptoms of cretinism are skeletal changes mental defects and deaf mutism. In dwarfed cretin the thyroid is atrophied whereas in the absence of skeletal defects it is of normal size or enlarged. The genitalia and growth of hair are defective in the dwarfed cretins but not in cretins of normal stature.

In any explanation of the pathological physiology it is necessary to take into consideration the fact that only a very small amount of thyroid tissue is required for intense intoxication an observation which discounts the presence of a pure hypersecretion.

In the use of the term hypothyroidism there is much confusion. At present clinical myxedema or cretinism should be accepted as the criterion of hypo-

majority of cases several readings were made. The cases were not selected.

The Aub Dubois formula based on the law of body surface and the Kestner Knipping formula gave closely parallel results because of common factors but the value obtained with the former was generally seven units less. When the height of the body is abnormally great or small the values must be judged with care but when the height is normal the results can be considered reliable.

In the cases of girls who are growing rapidly and in whom a normal thyroid gland may be in contrast to a thin neck the diagnosis of goiter must be made with caution. In the cases of others a slight swelling of the anterior part of the neck may be called goiter especially when it is accompanied by nervous vasomotor symptoms.

The author's material is divided into the following four groups:

Group 1 Cases of goiter with clinical symptoms of hyperthyreosis (Basedow's disease)

Group 2 Cases of goiter without clinical symptoms of hyperthyreosis

Group 3 Cases of goiter of Holmgren's type

Group 4 Cases of slight diffuse enlargement of the thyroid (thick neck)

Although the clinical symptoms in all of the cases of Group 1 were similar and suggested the presence of hyperthyreosis the basal metabolic rate in some of them was within normal limits or only slightly increased.

In Group 2 the basal metabolic rate was within normal limits or somewhat below normal.

Group 3 included cases of goiter which in addition to symptoms of hyperthyreosis showed an abnormal growth in height. In two there were symptoms of Basedow's disease with a high basal metabolic rate. In all except one of the others the basal metabolic rate was normal. In the one exception the rate was high but fell to normal after hospital treatment.

In Group 4 the basal metabolic rate was normal in all except one case. In the one exception it was below normal and after thyroid medication the enlargement of the neck disappeared.

At the age of puberty the variations in the normal limits of the basal metabolic rate are much greater than in adults especially when there is any deviation from the normal in the patient's height and weight. An obviously increased basal metabolism supports the diagnosis of hyperthyreosis but a normal basal metabolic rate does not exclude the presence of hyperthyreosis when the other clinical symptoms favor the diagnosis. A single clinical symptom does not justify the diagnosis of hyperthyreosis nor does a normal basal metabolic rate rule out such a diagnosis in the presence of clinical symptoms.

Zondek and others assume that in such cases of goiter with definite clinical symptoms of hyperthyreosis and a normal basal metabolic rate the condition is not a pure hyperfunction of the thyroid but is a dysfunction due to the effect of other endocrine organs. By this hypothesis it may be possible to

explain the mixture of symptoms of hyperthyreosis and symptoms of hypofunction of the thyroid a syndrome not infrequently found in cases of goiter in girl at the age of puberty. E. S. PLATT, M.D.

Miller J. L. Thyrotoxicosis from the Internist's Standpoint. *Am J M Sc* 1929 cxxviii 93

Physiological enlargement of the thyroid occurs during infancy at puberty and during pregnancy. At these times the gland histologically resembles the hyperplastic goiter of hyperthyroidism but does not cause toxic signs or symptoms. Some observers believe the instability of the nervous system at puberty is due to a mild hyperthyroidism. Aschoff refers to Hellwig's finding of an increase in the basal metabolic rate.

Iodine will usually prevent the physiological hyperplasia. After the administration of iodine the hyperplasia disappears and the gland reverts to the colloid type. Physiological hyperplasia is not confined to goiterous districts but is more marked in those districts.

The amount of iodine required to prevent hyperplasia is exceedingly small. The iodized salt used in Switzerland contains 5 mgm per kilogram and the annual intake of iodine is about 15 mgm. In America the iodized salt contains 200 mgm and the annual intake of iodine is approximately 600 mgm or forty times that of Switzerland. The estimated annual iodine requirement of the thyroid under normal conditions is about 50 mgm.

The apparently excessive iodine content of salt is thought to cause the conversion of simple goiters into those of the toxic type.

In surgery of the thyroid the atrophy of the thyroid that occurs with advancing age must be taken into consideration.

The first clear description of exophthalmic goiter was given by Möbius in a monograph published in 1836. To date no one has improved on Möbius' definition of Basedow's disease as an intoxication of the body due to abnormal activity of the thyroid.

The pathological histology of the thyroid in hyperthyroidism is varied. St. dies of the basal metabolism have shown the presence of hyperthyroidism without material enlargement of the gland and the classical triad of goiter, exophthalmos and tachycardia has been abandoned.

Two general types of gland are recognized—the diffuse hyperplastic and the nodular or adenomatous. It is debatable whether the adenoma is a true tumor or merely a parenchymatous hyperplasia.

Certain simple adenomata respond to iodine in the same manner as the hyperplastic thyroids and a toxic adenoma responds as well as the exophthalmic type. DeQuervain and Aschoff believe that the adenoma is capable of hypofunction and hyperfunction and that the hyperplasia may be confined to the adenoma but MacCallum noted the hyperplasia in an infolding of hyperplasia in the nodule in only 1 of 16 cases of toxic adenoma. In a study of 180 cases of so-called toxic adenoma Rienhoff and Lewis found

# SURGERY OF THE NERVOUS SYSTEM

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Skinner H A The Origin of Acoustic Nerve Tumors *Brit J Surg* 1929 xvi 440

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The peripheral portion of the auditory nerve is in general similar to that of other peripheral nerves but contains a greater amount of fibrous tissue. This fibrous tissue is probably in the nature of a tissue reaction.

Two types of acoustic nerve tumors are distinguished: the cellular and the fibrous. Those of the former type are probably of more rapid growth and more easily removed at operation, while those of the latter type have a longer history but tend to bleed more and are liable to be adherent to the dura and adjacent tissues. Many tumors occupy an intermediate position between these two types.

The type of tumor may be determined by the degree to which the fibroblasts are able to confine the neurilemma cells during the process of development.

ALBERT S CRAWFORD M D

## SPINAL CORD AND ITS COVERINGS

Burley B T Spinal Cord Decompression: Indications and Results *New England J Med* 1929 cc 319

In Burley's opinion spinal cord decompression might be performed with advantage more often for paraplegias in the early stages with spinal cord compression.

Compression of the spinal cord may be acute or subacute. The acute type may be due to fracture dislocation of vertebrae, hemorrhage with or without hematoma, edema of the arachnoid and abscesses. The subacute or chronic type may be the result of a bony lesion, tuberculosis of the bone, tumor, syphilis, a circulatory lesion, meningeal disease or arachnoiditis.

The author reviews the literature briefly and reports three cases. The first case was that of a twelve-year-old girl with an epidural abscess which caused a complete block at the level of the twelfth dorsal vertebra. Evacuation by laminectomy resulted in a complete cure. The second case was that of a man of

forty-one years with a spinal block at the level of the twelfth dorsal vertebra, a complication of pneumococcal meningitis. Drainage was done but the patient died. The third case was that of a woman twenty-two years old in whom a pressure myelitis and arachnoiditis developed secondarily to an endothelial myeloma of vertebrae and a rib. Operation exposed the lesion but proved fatal.

ALBERT S CRAWFORD M D

Chlenoff Z G and Vodogulinskaya S V A Case of Spinal Arachnoiditis Operated upon Twice (Un caso de aracnoiditis espinal operada dos veces) *Arch argent de neurol* 1928 ii 311

The patient whose case is reported was a woman twenty-nine years of age who was admitted to the hospital on October 12, 1925, for spastic paraparesis of the lower limbs. In February 1924 she had had chills followed by copious sweating and for this condition she had taken quinine as she lived in a malarial region. In the second week of the illness she began to notice weakness in her right foot. The weakness increased and in September 1924 it was difficult for her to lift her foot and she was unable to take a long step. In March 1925 she began to notice weakness also in the left foot and she frequently fell. After August 1925 she had difficulty in retaining her urine and her vision became poor.

When she entered the hospital her mental condition was found normal. The spleen was enlarged. The movement of all of the joints was limited by spasticity. At the knee there was a hypertonic pendulum reflex. Urinary continence alternated with urinary incontinence. Below the second dorsal vertebra pain, heat and tactile sensation was decreased and below the fifth dorsal vertebra there was complete pain and temperature anesthesia. Muscle sense was normal. The Wassermann test was negative. Signs of compression of the spinal cord were noted. Lipodol stopped at the third dorsal vertebra but after a few days it passed on down to the third lumbar vertebra and a few days later only isolated drops could be seen at either of these levels.

Mercury neosalvarsan and quinine were without effect. The symptoms progressed; pain developed in the region supplied by the second and fourth dorsal nerves and there was a zone of hyperalgesia at the level of the second dorsal nerve. Ultimately the patient became unable to walk.

On February 24, 1927, resection of the laminae of the third to fifth dorsal vertebrae disclosed in the subarachnoid space a membrane stretched like a sail which was adherent to the pia mater and the arachnoid. This membrane was resected. After the operation the patient showed marked improvement.

thyroidism and not the basal metabolism alone since a low basal rate may be present without evidence of hypothyroidism.

The diagnosis of hyperthyroidism is complicated by the frequency of simple goiter and the fact that in many cases of hyperthyroidism there is only very slight enlargement of the gland. Signs and symptoms may precede an increase in the basal rate. Later in life and in long standing hyperthyroidism there may be tachycardia or fibrillation with only a slight increase in the basal rate and the condition may be classified as chronic heart disease. Goiter and hypertension may be accompanied by increased metabolism without hyperthyroidism. In distinguishing a functional nervous disturbance from hyperthyroidism observation for a few weeks and repeated determinations of the basal rate are necessary.

Iodine hyperthyroidism resulting from the administration of iodine or iodized salt may be relieved by withdrawing the iodine. Except in intense intoxication observation over a period of two months is advisable before radical treatment is undertaken.

Drug therapy does not cure. Apparent cure under medical treatment is due probably to the tendency of the disease to undergo spontaneous remissions. Iodine is not curative. Its chief use is limited to preparation for operation. Digitalis is indicated only in auricular fibrillation and is less effective than in fibrillation due to other causes. The best cardiac treatment is rest in bed. Physical and mental rest is incapable of effecting a cure.

Only surgery and roentgen ray therapy are beneficial or curative. Roentgen ray irradiation is a valuable form of therapy and is free from the undesirable complications of laryngeal paralysis, tetany and myxedema. The administration of iodine before operation has lowered the operative mortality.

The internist awaits the presentation of satisfactory evidence of the percentage of cures by these two methods. A report from the Lahey clinic in Boston is satisfactory for a surgical series except for the short time that has elapsed since the treatment. In 92 per cent of the cases there has been complete relief from the hyperthyroidism but 15 per cent of the patients show definite evidence of clinical myxedema. A high incidence of cures seems to be accompanied by a relatively high incidence of myxedema.

No follow up series has been reported for roentgen ray therapy.

Following less radical removal the incidence of cures was reduced to 70 per cent approximately that obtained with the roentgen ray. This is probably the limit of the curative effect of the roentgen ray. Even though the higher incidence of cures following surgery carries with it a greater incidence of myxedema the aftermath is less disabling than the original disease.

The use of the roentgen ray is not advisable in the severe cases since a period of from eight to twelve weeks must elapse before the results are apparent. In the milder types roentgen ray irradiation is permissible but even in the milder forms either surgery or roentgen treatment is much preferable to a hope for spontaneous recovery.

In the pre-operative preparation iodine is essential. Sodium iodide is more palatable than Lugol's solution and just as efficient. One cubic centimeter of Lugol's solution is equivalent to 150 mgm of sodium iodide. When iodine is continued over a long period there may be a return of toxicity. Iodine should not be discontinued until surgical measures have been carried out.

The length of time that the administration of iodine should be continued after operation is debatable and the value of iodine in preventing recurrence is not settled.

The mode of action of iodine has not been determined nor has it been proved that large doses of iodine are indicated.

A condition of rest favors better remissions. The length of time required for a satisfactory remission is usually from eight to twelve days and occasionally as long as three weeks. Longer delay is usually disappointing from 5 to 10 per cent of cases failing to show a remission.

It is important to recognize the development of myxedema in order to prevent chronic invalidism.

Of the operative measures subtotal thyroidectomy is more successful in relieving hyperthyroidism than lobectomy. However the latter procedure gives a cure in about 70 per cent of cases without the danger of myxedema and when necessary may be followed by a second operation. When total thyroidectomy is required myxedema is unsatisfiable.

E. S. PLATT, M.D.

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## MISCELLANEOUS

but later she had severe pain in the feet and there was a considerable decrease of sensation of the root type in the regions supplied by the fifth lumbar to the third sacral nerves

At another laminectomy performed on June 18 1921, the laminae of the third to fifth lumbar vertebrae were resected the dura mater was sectioned and a membrane similar to that found at the higher level was discovered This membrane also was resected Following the operation the patient showed marked improvement The improvement is continuing under treatment with injections of fibrolysin and diathermy

The patient's history of typical attacks of chills fever and sweating the irregular fever and the enlargement of the spleen noted in the hospital and the fact that the patient lived in a malarial region indicate that the arachnoiditis was caused by malaria The marked and progressive improvement following the second operation indicates that only the meninges were affected

ANDREW C MORGAN M D

## SYMPATHETIC NERVES

Cappell D F. Retroperitoneal Ganglionic Neuroma. *J Path & Bacteriol* 1929 xxi: 43

New growths of the peripheral nervous system composed of true nervous elements are relatively uncommon They usually occur in connection with the abdominal sympathetic chain They may attain a large size and generally present an admixture of adult and embryonic tissue Those in which the nervous elements are of adult type are rare The neuroma reported in this article was possibly the largest on record and consisted solely of adult cells and fibers

The patient a woman of twenty seven years complained only of slight pain in the right abdomen of one year's duration Physical examination was essentially negative except for a mass in the right lumbar region A diagnosis of retroperitoneal tumor was made and the neoplasm was exposed through a right rectus incision It was adherent to the inferior vena cava and common iliac veins but was cleanly removed It measured 18 by 18 by 18 cm and weighed 1020 gm Convalescence was uneventful and three years later the patient appeared to be in perfect health

The tumor probably arose from the abdominal sympathetic chain Both its gross and its microscopic appearance was that of a ganglionic neuroma Its structure was uniformly adult in type with non-medullated fibers markedly predominating over the ganglionic cells The interstitial tissue was myxomatous No neuroblastic elements were found The subsequent history of the case confirmed the view that the tumor was simple in type

The author includes in his article a photograph of the gross cross section of the tumor two pyelograms and eight photomicrographs

ALBERT S CRAWFORD M D

Danisch F and Nedelmann E. A Malignant Thymoma with a Peculiar Metastasis into the Central Nervous System in a Child Three and a Half Years Old. Also a Contribution on the Clinical Picture and Pathological Anatomy of Tumor Metastasis by Way of the Cerebrospinal Fluid (Bod. atiges Thymom bei einem 3½ jährigen Kinde mit einseitiger Metastasierung ins Zentralnervensystem. Zugleich ein Beitrag zur Klinik und pathologischen Anatomie der Geschwulstmetastasen auf dem Liquorwege). *Arch f path Anat* 1928 cclxvii: 402

The authors report a malignant thymoma in a child three and a half years old which was remarkable on account of the metastases formed in the cranial and spinal nerves The peculiar propagation of the tumor in these nerves must have taken place by way of the cerebrospinal fluid from a plexus metastasis The case is therefore of special importance with regard to the still disputed question as to the movement and absorption of the cerebrospinal fluid The manner of the tumor infiltration of the perineural and endoneural lymph channels in the dura strongly suggests that the greater part of the cerebrospinal fluid is carried off through the lymph channels of the cranial and spinal nerves At the sites of emergence of the nerves through the dura there is a physiological narrowing of the efferent lymph channels At these sites especially, there had occurred in the case reported a massive implantation of tumor cells and extensive nodular swelling of the affected nerves

STAHL (2)

Carran F C. The Relief of Pain by Nerve Section. *J Am M Ass* 1929 xcii: 116

The pain of malignant conditions in the sensory distribution of the fifth cranial nerve can be relieved by alcohol injection or intracranial section of the proper branches of the nerve Such blocking is followed by general improvement a gain in weight and strength a change in the mental attitude and willingness to continue proper treatment whereby life is lengthened and a cure effected in some cases and in others the terminal period of life is rendered more comfortable

In cancers of the floor of the mouth and tonsil the pain is difficult to control as these regions are supplied not only by the trigeminal nerve but also by other cranial nerves and the cervical nerves Pain in the ear and throat is not affected by trigeminal section Frequently besides the major pain in the trigeminal area there is a minor pain elsewhere which assumes as much importance as the major pain after the major pain has been relieved

Alcohol injection is suitable only for relatively small lesions in an area supplied by a single division of the nerve It is satisfactory within its limited field but operation is preferable Since most painful malignancies are in the lower two thirds of the face complete avulsion of the sensory root is usually unnecessary Section of the nerve trunks peripheral

to the ganglion is a simple procedure and avoids ophthalmic complications.

Greater relief is possible in cases of superficially situated growths within the trigeminal area than in those of growths involving the deeper areas of the face and mouth. Complete permanent relief of pain is less likely when the floor of the mouth, tonsillar pillars or nasal accessory sinuses especially the ethmoid or sphenoid sinuses are involved. Rapid spread of the growth outside the zone of anaesthesia may cause a recurrence of the pain.

When cessation of the pain and freedom from the necessity for morphine is obtained the result is considered successful. If pain recurs outside the trigeminal area but is easily controlled by morphine until death the result is considered partially successful.

Of fifty six patients with cancer of the face who were treated by nerve block thirty two were completely relieved fourteen were partially relieved and nine were not relieved. Of the nine who were not relieved four showed extensive degeneration of the superior maxilla involving the accessory sinuses and five had widespread involvement of the floor of the mouth.

In cases of pain in the neck beneath the angle of the jaw and below the sensory distribution of the trigeminal nerve laminectomy with section of the upper three or four posterior cervical nerve roots is most effective. The anaesthesia thus produced extends from the vertex of the scalp down to the level of the clavicle and the spine of the scapula. However this operation will not relieve pain in the ear or deep in the throat. Section of the peripheral branches of the cervical nerve where they wind forward over the sternomastoid muscle is simpler than high cervical laminectomy and in many instances is just as effective. Extensive malignancy involving

the posterior and anterior triangles of the neck precludes peripheral nerve section and indicates cervical rhizotomy.

Neither trigeminal section nor cervical rhizotomy will affect pain deep in the ear or in the throat. Section of the glossopharyngeal nerve preferably intracranial than extracranial will relieve the pain in the throat but pain deep in the ear is not affected by this operation or by section of the vagus or extracranial section of the cervical sympathetic chain.

Following the success of nerve section in malignant conditions of the face the procedure was applied to malignancy in other parts of the body gastric crises and painful amputation stumps.

Two methods are possible posterior rhizotomy and chordotomy either unilateral or bilateral.

Rhizotomy should be used in cases of relatively localized lesions not involving more than four dermatomes. Because of the overlapping of the sensory nerve supply of adjacent sensory segments the posterior roots running to the segments above and below the region involved must be cut. Therefore six posterior roots must be sectioned for a lesion causing pain in four dermatomes. Six roots can be exposed by removing five laminae which is about the limit of safety.

Chordotomy is indicated in extensive unilateral or bilateral pain passing over nerve pathways entering the cord below the first thoracic segment. In Frazier's opinion chordotomy above this level is unsafe because of possible involvement of the phrenic distribution. The point of election for severance of the anterolateral columns is between the first and fourth thoracic segments. It is necessary to remove only three laminae. This procedure is especially indicated in malignancy of the pelvis with deep pain in the pelvis or the legs.

T. S. PLATT, M.D.



# SURGERY OF THE CHEST

## CHEST WALL AND BREAST

Cheatle Sir G L The Interpretation of Breast Histology *Lancet* 1919 ccxvi 37

Cheatle states that epithelial hyperplasia of the breast should be classified as genetic when it is normal as desquamative when the process ends in the shedding from the surface of the epithelium of cells which are incapable of existing separately or of multiplying and finally die and as dysgenetic when there is a pathological formation of living cells which are capable of multiplying

He suggests the term mazoplasia to replace the term chronic mastitis since the condition to which the latter is applied is of the desquamative type and has no etiological connection with an inflammatory process Cystophorous (cyst forming) hyperplasia is the second process of the desquamative type and is important because it may become dysgenetic If the epithelial hyperplasia is dysgenetic the pathologist should state whether it is papillomatous and confined within normal boundaries or has become a duct carcinoma

In Cheatle's opinion it is safest to remove all breasts that are cystic or contain dysgenetic epithelial hyperplasia NATHAN N. CHODIN M D

## TRACHEA LUNGS AND PLEURA

Ronzini M Pulmonary Tuberculosis and Unilateral and Bilateral Pneumothorax in Pregnancy (Tubercolosi polmonare e collassoterapie unilaterale e bilaterale in gravidanza) *Clin esiet* 1918 xxx 611

There is no doubt that pregnancy may aggravate either an active or a latent pulmonary tuberculosis but it is true also that in a very considerable percentage of cases the pregnancy does not have any effect at all on the disease As there are no accurate data available concerning the later prognosis of the tuberculosis in such cases the course to be followed in regard to the pregnancy should be decidedly conservative and abortion should be induced only when it can be proved that the aggravation of the tuberculosis is due to the pregnancy and is not merely an associated condition

As pregnancy does not constitute a contra indication to artificial pneumothorax the indications for this method of treatment are the same as in the non pregnant state In addition to its usual advantages this treatment has the advantage in pregnancy of overcoming the disequilibrium in the intrathoracic pressure caused by the pregnancy If the pneumothorax is induced with special care with only partial collapse and negative pressure and if a careful watch is kept over the patient the treatment is

perfectly compatible with normal pregnancy and labor If pneumothorax cannot be induced for technical reasons extirpation of the phrenic nerve may be substituted as it has been found that paralysis of the diaphragm does not interfere with the normal course of pregnancy and labor

Ronzini reports five cases in which unilateral pneumothorax was induced and one case in which bilateral pneumothorax was induced without interfering with normal pregnancy and labor

AUDREY G MORGAN M D

Lilienthal H and Amberson J B Unilateral Pneumothorax The Behavior of the Mediastinum *Arch Surg* 1919 xviii 533

From a roentgen study of the behavior of the mediastinum in unilateral pneumothorax the authors draw the following conclusions

1 In pneumothorax with an external opening blowing exercises tend to inflate the collapsed lung and force the mediastinum toward the open side

2 In closed pneumothorax blowing exercises tend to compress the collapsed lung and force the mediastinum toward the healthy lung which is also compressed

3 In pneumothorax with an external opening straining with the closed glottis deviates the mediastinum toward the open side and expands the collapsed lung

4 In closed pneumothorax straining with the closed glottis produces little or no deviation of the mediastinum

5 In closed pneumothorax forced expiration tends to rotate the heart and its attachments

6 In the roentgenological study of closed or open pneumothorax observations and records should be made in deep inspiration in full expiration and in straining with the glottis closed

J FRANK DOUGHTY M D

Dotley F S and Wiese E R The Effects of a Large Closed Bilateral Pneumothorax on Thoracic Lymph Flow *Arch Surg* 1919 xviii 54

In experiments on dogs the authors found that bilateral closed pneumothorax caused a marked reduction in the intrathoracic lymph flow They believe that it has the same effect in man and that in suppurative diseases of the lungs it may act beneficially by lessening the toxic absorption that is breaking down resistance or harmfully by producing an effusion with its attendant danger of infection by pyogenic organisms

They state that the operation of choice in tuberculosis is the one that gives maximal rest lymph stasis and fibrosis with minimal pulmonary collapse and circulatory disturbance J FRANK DOUGHTY M D

Churchill E D. The Strain on the Collateral Lung in Collapse Therapy. *Arch Surg* 1929 xviii 553

The author's experiments on cats have demonstrated that the burden thrown on a lung by sudden increases in the volume of blood flow is compensated for not only by an increase in ventilation but also by an increase in the area of the functional diffusing surface brought about by the opening of reserve capillary pathways.

Therefore when clinical cases are studied with a view to collapse therapy the possibility of strain on the collateral lung arising from an increased functional burden may often be greatly discounted.

J FRANK DOUGHERT M D

Kline B S and Berger S S. Pulmonary Abscess and Pulmonary Gangrene. Clinical Course and Pathology. *Arch Surg* 1929 xviii 481

In pulmonary abscess the sputum is whitish velvety mucopurulent and without an appreciable odor. When washed it usually shows pyogenic organisms generally staphylococci. In pulmonary gangrene the sputum is foul smelling and grayish brown or grayish green. When carefully washed and properly stained it shows the characteristic spirochetes fusiform bacilli and vibrios.

Pulmonary gangrene responds well to treatment with arsphenamine but poorly to abscess therapy.

GEORGE A COLLETT M D

Lilienthal H. Cyst of the Lung. Recovery Following Operation for Permanent Drainage. *Arch Surg* 1929 xviii 291

The author reports a case of cyst of the lung in a woman fifty four years of age. For nine years the patient had had pain in the chest and for six months indefinite nervous spells at night. The X-ray revealed in the upper left part of the chest a large globular mass which on aspiration yielded a chocolate-colored fluid. The mediastinum was displaced to the right and there was beginning obstruction of the esophagus. A diagnosis of dermoid cyst was made.

Under local anesthesia supplemented by the use of nitrous oxide a portion of the second rib was removed and an effort made to marsupialize the cyst to the chest wall. The cyst wall could be readily seen. It was bluish and contained many large vessels on its surface. Gauze packing was inserted and the chest closed. Alarming dyspnea twenty four hours later was found to be caused by great displacement of the mediastinum and a large amount of fluid in the chest. The introduction of drainage tubes resulted in little relief.

At a second operation a piece of the cyst wall which was thick and resembled embryonic skin was removed and large tubes were inserted into the cyst cavity for dependent drainage. To prevent dyspnea the tubes were filled with a finger cot stopper valve. The cavity drained quite freely. The fluid later became of a mucoid character and finally an

organized canal was formed between the cyst cavity and the skin surface.

The patient made a complete recovery and is now quite comfortable but must continue to wear a tube with a valve at all times to prevent distressing dyspnea. On account of her age no attempt will be made to remove the cyst wall.

Even though the contents of the cyst did not reveal the hair and other elements usually found in dermoid cysts the character of the cyst wall seemed to establish the origin of the cyst definitely. In the author's opinion the embryonic origin of this type of cyst may be the pinching off of a bronchus or bronchiole with the formation of a retention cyst or faulty anlagen of the lymph vessel systems of the corresponding lung. The cyst in the case reported may have been of either origin but on account of the total absence of an epithelial lining the author believes it was due to a faulty anlage.

WILLIAM J PICHAULT M D

Meyer W. Primary Cancer of the Lung. *Arch Surg* 1929 xiii 107

Kernan J D and Cracovanar A J. Carcinoma of the Lung. *Arch Surg* 1929 xviii 315

MEYER is of the opinion that cancer of the lung is due like other cancers to chronic irritation. The irritation may be caused by the constant inhalation of smoke dust soot ashes or other impurities in the air. The more frequent incidence of cancer in the right lower lobe than in the left lower lobe is explained by the fact that the right main bronchus is straighter and larger than the left main bronchus. The fact that from 85 to 90 per cent of cancers of the lung develop primarily in the larger bronchus and not in the parenchyma of the lung is probably explained by the very rich blood supply of the parenchyma.

Meyer emphasizes that for improvement of the results in pulmonary malignancy early diagnosis and aggressive radical treatment of the cancer while it is still limited to the bronchus are essential.

KERNAN and CRACOVANER report the case of a woman with complete atelectasis of the left lung due to blocking of the left main bronchus by a carcinoma. The tumor was seemingly entirely removed by the use of radium seeds and the application of diathermy through the bronchoscope. In the period of a little over a year since the beginning of treatment the patient has been entirely relieved of her symptoms.

This case is reported to emphasize the value of bronchoscopy in the diagnosis and treatment of tumors of the lung and the importance of investigating the cause of atelectasis by bronchoscopy.

In the discussion LEMON called attention to the fact that bronchostenosis is present in the majority of cases of bronchial tumor.

BRUNY reported two cases in which the roentgenogram showed a tumor the size of an orange in the upper part of the chest. These cases resembled each other so closely that when the roentgenograms

were compared it was scarcely possible to distinguish one from the other but at operation one tumor proved to be an osteochondroma arising from the intervertebral disks and the other a cyst arising from the posterior mediastinum

RALPH B. BETTMAN, M.D.

### HEART AND PERICARDIUM

Cutler E. C. and Beck C. S. *The Present Status of the Surgical Procedures in Chronic Valvular Disease of the Heart. Final Report of All Surgical Cases. Arch Surg.* 1929, LVII, 423

Operation has been performed in twelve cases of chronic valvular disease of the heart. The authors review the ten cases recorded in the literature and report two in which they themselves performed the operation. The twelve cases include one case of aortic stenosis, one case of pulmonic stenosis and ten cases of mitral stenosis.

In the case of aortic stenosis which was operated upon by Tuslier a finger dilatation of the aortic ring was effected by invaginating the aortic wall into the stenotic ring. The patient recovered and showed improvement over several years of observation.

In the case of congenital pulmonary stenosis with a patent interventricular septum a tenotome was inserted into the right ventricle in an attempt to divide the stenotic valve. Death occurred shortly after the operation.

Of the ten patients with mitral stenosis only one is living. The mortality in this group was therefore 90 per cent. In the eight fatal cases death occurred so soon after the operation that the changes brought about in the mechanics of the circulation could not be adequately studied.

In the case reported by Souttar a finger dilatation of the mitral ring was performed. The finger was inserted into the mitral orifice through an opening made in the auricle. The patient is still living and shows improvement.

In the case reported by Cutler and Levine in which the mitral ring was incised with a tenotome inserted into the left auricle the patient lived for four and one half years after the operation and showed general improvement although there was no definite improvement in the circulation.

The exposure of the heart is determined by the method of approach to the valve itself. If the mitral valve is approached through the ventricle the midline sternotomy or large osteoplastic flap is necessary. If the valve is approached through the auricle a less extensive exposure by resection of costal cartilages and the sternum may be adequate. The problem of locating the stenosed valve by either approach is discussed in detail.

In the cases reviewed three methods were used in the attempt to enlarge the stenotic orifice: namely, finger dilatation, incision of the stenotic valve with a tenotome knife and excision of a segment of the stenotic valve with the cardiovalvulotome designed by the authors. In one case in which death occurred

during the operation the cardioscope was used. This gives only a very slight degree of visualization of the endocardium at the point of contact with the instrument.

The authors believe that the gradual transformation of a stenotic valve to a valve of the insufficient type is more successful than a sudden change produced by the removal of a piece of the valve. However this problem cannot be solved until it is possible to produce experimental stenoses similar to those occurring in man and then suddenly cause insufficiency.

The article contains eight plates showing the mitral valve after the operation in the cases that came to autopsy. J. EDWIN KIRKPATRICK, M.D.

### ESOPHAGUS AND MEDIASTINUM

Friedenwald J. Feldman M. and Zinn W. F.: *Peptic Ulcer of the Esophagus. Am J M Sc.* 1929, LXXVI, 1

Peptic ulcers of the esophagus closely resemble peptic ulcers of the stomach and duodenum. They occur most frequently in the lower third of the esophagus but occasionally are formed higher up. Those situated near the cardia rarely extend downward into the stomach. The lesions vary from minute round or oval hemorrhagic areas to large irregular areas between 8 and 10 cm. in length. They may be superficial or deep. As to ulcer of the stomach there may be erosion of blood vessels with hemorrhage or perforation and the formation of adhesions to neighboring organs. Although the ulcers are usually single they may be multiple. Occasionally several ulcers coalesce to form large irregular lesions. The right posterolateral wall of the esophagus is involved most frequently. With healing of the ulcers cicatrices are produced which lead to stenosis.

The etiology of peptic ulcer of the esophagus is similar to that of ulcer of the stomach or duodenum.

The most prominent symptoms are pain, dysphagia and vomiting. The diagnosis may be greatly aided by fluoroscopy and esophagoscopy.

Four types of defects have been noted on roentgen ray examination: mucosal erosions and penetrating spastic and perforating defects. The penetrating defect is pathognomonic. Stricture is a complication seen after healing of the lesion.

The treatment consists in the eradication of foci of infection, rest, regulation of the diet and the administration of olive oil, alkalies and belladonna supplemented at times by the direct application to the diseased area of various remedies such as silver nitrate. In obstinate cases gastrostomy may be necessary.

The authors report thirteen cases. Seven of the patients were males. The ages ranged from twenty-eight to sixty-eight years. In one case there were two ulcers. Nine of the ulcers were in the lower third of the esophagus, one was in the middle third and four were in the upper third. Dysphagia and substernal discomfort were present in all cases and pain was

present in all but two. Pyrosis, vomiting and regurgitation occurred in six cases and hæmorrhage in three. All cases showed œsophageal defects in the roentgen picture. The duration of the condition ranged from ten days to eight years. Eight of the patients were relieved by simple dietetic and medical management. In three cases relief resulted from dietary measures and the focal application of silver nitrate. One patient was not benefited and one died of perforation followed by pneumonia.

MANUEL E. LICHTENSTEIN, M.D.

### MISCELLANEOUS

Graham E. A. The Significance of Changed Intrathoracic Pressures. *Arch Surg* 1929, LVIII, 181.

Graham emphasizes that the principle of compressive or collapse therapy has been of the utmost value in properly selected cases of pulmonary tuberculosis and pulmonary suppuration, but such treatment will be made entirely safe and satisfactory only when we have acquired a much greater knowledge of its effects on fundamental physiological processes. In the normal thorax any great increase of pressure in one pleural cavity results in pressure disturbances not only on the lung of the same side but also on the lung of the other side.

Of the other effects of collapse therapy, some are beneficial and others are harmful. In experiments on animals, Sauerbruch found that an increased thoracic pressure caused by an open pneumothorax raised the venous pressure in the extremities, a result which seemed to indicate that the flow of venous blood into the heart was impaired.

At the Washington University Medical School, St. Louis, Allen is now engaged in an investigation of the resistance of the normal and diseased myocardium to changes in intrathoracic pressure. Graham has frequently noticed that patients who have been in bed for a long time are more likely to develop pulmonary œdema after thoracoplasty than patients whose myocardium has been maintained in a more robust condition by exercise.

Thoracoplasty may markedly reduce the vital capacity, but this is not necessarily a serious matter

unless the patient develops pneumonia or cardiac decompensation.

Our knowledge of the effect of increased intrathoracic pressure on the pulmonary blood and lymph circulation is at best fragmentary. In experiments on dogs, Andrus found that after the ligation of the main bronchus of one lung a marked reduction in the amount of blood occurred in the atelectatic lung. The presence of the atelectasis seemed to be the decisive factor in the diminution of the blood supply. White and Gammon found experimentally that if fat is injected intravenously after the induction of unilateral pneumothorax, all of it will go to the opposite lung. In experiments on rabbits and cats to determine the effect of increased intrathoracic pressure on the lymph flow, Singu noted that after the inhalation of soot the production of a unilateral pneumothorax greatly prolonged the time required for the elimination of the soot on that side as compared with the other side. He attributed this effect to a reduction of the lymph drainage caused by immobilization of the respiratory movement. Diminution of the thoracic lymph flow may at times be beneficial and at other times harmful. Nagel concluded that the improvement after thoracoplasty is due to a reduction of toxic absorption resulting from the reduction in the lymph flow. In experiments on animals, Bettman found that in the presence of pneumothorax the absorptive power of the pleura for India ink was reduced.

Still more meager than our knowledge of the effects of compression therapy is our knowledge of the effects and potentialities of decompression therapy. However, the strikingly beneficial effects of the withdrawal of air or fluid from the pleural cavity in cases of tight pneumothorax or large accumulations of fluid suggest that in cases of severe dyspnoea caused by extensive thoracic tumors a similar beneficial effect might be expected from decompression induced by the removal of several ribs or by longitudinal splitting of the sternum. It is probable also that in certain heart diseases benefit might be expected from release of the pressure on the heart by cardiolysis or section of the ribs over the precordium.

RALPH B. BETTMAN, M.D.

# SURGERY OF THE ABDOMEN

## GASTRO INTESTINAL TRACT

Galli G and Polacco E Experimental Physio-pathology of the Stomach as Related to the Nervous System (Fisiopatologia gastrica sperimentale in rapporto coll'apparato nervoso) *Arch ital di chir* 1928 xxi 269

By operations on the intrinsic and extrinsic nervous system of the stomach combined with partial or total ligation of the arteries of the lesser curvature the authors succeeded in experiments on dogs in changing the secretory and motor function of the stomach for a period of eight months and in bringing about characteristic anatomical lesions in a large percentage of the animals.

The effects on the gastric chemism in the thirty seven experiments may be divided into two groups. In the animals subjected to gastric denervation by Latarjet's method and interruption of the vago sympathetic as proposed by Schiassi for ulcer of the duodenum there was a decrease in acidity and gastric secretion and also in the peptic power. In the animals in which section of the vagosympathetic was done as proposed by Schiassi for gastric ulcer and accompanied by denervation of the lesser curvature there was an increase in acidity and peptic power. These findings show that the nerves of the greater curvature have an important effect on secretory function.

Roentgen examination more than chemical examination showed the effects of the operations on the motor function of the stomach that is the changes in tonus and peristalsis and emptying time of the stomach. In all of the experiments gastric tonus was most affected it showed hypotonia gradually increasing to atony with great retardation in the emptying time to as long as three times the normal. Peristalsis was also affected there was a late decrease in peristalsis sometimes to a great degree with few and shallow peristaltic waves. The marked retardation of emptying was an important factor. Peristalsis was good at first but tonus was defective from the beginning. The changes seen in the roentgen picture in the cases of animals subjected to Latarjet's operation indicate that intramural innervation is not capable of keeping up the normal motor function of the stomach contrary to the conclusions reached by some investigators.

In the cases of three dogs the roentgen demonstration of gastric ulcer near the pylorus was confirmed at necropsy. Gastric ulcer was produced in six of the dogs 25 per cent of those that lived more than thirty days. The ulcers were seen only in those subjected to total or subtotal denervation with the addition of Schiassi's operation for gastric ulcer. No ulcers were found in the animals subjected to Schiassi's operation for duodenal ulcer.

The experiments show the importance of stomach innervation in the production of experimental ulcer particularly when there are other accompanying factors. They demonstrate also that a certain degree of caution is necessary in operating on the nerves of the stomach for therapeutic purposes.

AUDREY G MORGAN M D

Radice L The Physio-pathology of the Gastric Secretion in a Small Stomach without a Pedicle (Contributo allo studio della fisiopatologia della secrezione gastrica con piccolo stomaco senza peduncolo) *Ann ital di chir* 19 8 vii 867

The author criticizes the method by which Pavlov and Orbeli form a small stomach and study its secretion as he believes that their technique may not section all of the nerve tracts. In his own experiments a tubular diverticulum was first formed in the stomach wall and left attached by its base and in a second operation performed from fifteen to twenty days later the diverticulum was detached from the stomach its base incised and a fistula formed from it through the skin. In the interval between the two operations the diverticulum had formed adhesions to the omentum so that its nutrition was ensured after its detachment.

Three of the six animals died from retraction of the diverticulum followed by necrosis of its end and peritonitis. The others were given various kinds of nutritious food such as milk bread meat and potatoes. The secretion of the small stomach was then studied. In one set of experiments the food was given by mouth and in another by rectum but in neither group was there any specific secretion from the small stomach. The author therefore concludes that if the nerve supply of the small stomach is completely interrupted the stomach does not have a specific secretion. He intends to make further experiments in which foods and stimulating drugs such as pilocarpin will be introduced directly into the small stomach to determine whether they will stimulate specific secretion.

AUDREY G MORGAN M D

David V The Etiology of Ulcer of the Greater Curvature (Aetiology des Ulcus der Gro- en Kurvatur) *Ada chirurg Scand* 1928 lxxv 329

The author describes two ulcers of the greater curvature of the stomach.

The first was an elliptical ulcer which developed in the deepest point of the prepyloric part on the basis of necrosis caused by 50 per cent chloride of zinc. The presence of cancer was suggested by total anacidity and the findings of roentgen ray examination. The roentgen signs may be explained only by a circular spasm of the prepyloric part. Resection by the Billroth I method was following by primary healing. The

histological appearance of the lesion was that of a chronic peptic ulcer with intense inflammatory infiltration extending into the muscularis and subserosa.

The second ulcer closely resembled macroscopically a simple peptic ulcer but histological examination revealed aleukemic lymphadenosis. A Billroth II operation was followed by healing.

In 200 cases of gastroduodenal ulcer treated in the second surgical clinic of Charles University in Prague this rare localization was found only twice and in neither of the cases was there a true peptic ulcer.

In a review of the literature on ulcer of the greater curvature since the Finsterer and Glaessner report in 1914 the author found twenty four cases. In 41.66 per cent the lesion was proved histologically to be a true peptic ulcer. In 33.33 per cent it had a specific cause such as cancer, tuberculosis or aleukemic lymphadenosis. Twenty five per cent of the ulcers were not examined histologically.

Wilkie D P D Gastro Enterostomy *Surg Gynec & Obst* 1928 xlviii 79

By some surgeons gastro enterostomy has been abandoned as a treatment for gastroduodenal ulceration. By others it has been misused for the relief of gastric disturbances not associated with an organic lesion of the stomach or duodenum. However if we consider the many tens of thousands of persons who date their restoration to health from the time they were subjected to a gastro enterostomy we must recognize that this operation had a large field of usefulness and will have a permanent place in surgery.

The most effective surgical treatment for ulcer of long standing which has led to stenosis of the first part of the duodenum and dilatation of the stomach is gastrojejunostomy. This operation is uniformly successful also as a supplement to the closure of a perforated chronic duodenal ulcer and in the majority of cases in which it is used as a supplement to excision or cauterization of the ulcer it gives good results.

In the author's cases gastrojejunostomy is preceded by the elimination of foci of infection in the teeth. It is performed under general anesthesia supplemented by the local infiltration of 1 per cent novocain. The incision used is a vertical incision through the median third of the right rectus muscle or in the cases of viscerotonic and elderly patients a mid-epigastric incision supplemented by incisions in the anterior layers of both rectus sheaths.

The author believes that gastroduodenal ulcerations and infections of the gall bladder and appendix are due to intramural streptococci. He therefore deals as effectively as he is able with all foci of infection.

The gastro enterostomy of choice is the posterior gastro-enterostomy when it is possible. The most important single factor upon which the success of the operation depends is the site of the stoma. The stoma should be placed on that part of the posterior wall of the empty stomach which is directly opposite the beginning of the first coil of jejunum. The openings in the mesocolon must be adequate even if it is

necessary to sever the summit of the vascular arcade. The stoma should be made in a vertical direction across the long axis of the stomach. As a rule the author makes the anastomosis with clamps but in the cases of elderly patients and in difficult cases it is often best to dispense with clamps. In Wilkie's cases three layers of tanned No. 00 catgut are inserted so as to control hemorrhage but lightly enough to avoid devitalizing the tissues. The edges of the opening in the transverse mesocolon are tied to the stomach wall  $\frac{1}{4}$  in from the site of the anastomosis. The anterior duodenal ulcer is invaginated by a Lembert suture of catgut. This invagination favors healing of the ulcer by creating a temporary obstruction of the duodenal passageway.

When a midline incision has been used the abdomen is closed so that the mesial cut ends of the anterior rectus sheaths overlap the suture line of the linea alba. The rectus muscle then bulges on each side of the closure line when the patient strains thereby relieving the suture line of stress. Four figure of eight silk worm sutures are taken through the skin and the sutured linea alba and tied over a holster.

In the after care nothing is allowed by mouth for twenty four hours and for eight days the patient is kept on fluids and given an alkaline mixture. When there is heartburn or other evidence of hyperacidity intensive treatment with alkalis and atropine is given for the first few weeks.

STANLEY H. MENTZER, M.D.

Bastianelli P. The Results of Resection of the Stomach for Gastric and Duodenal Ulcer (I risultati della resezione di stomaco per ulcera gastrica e duodenale) *Arch ital de chir* 1928 viii 127

The author reviews 75 cases of resection of varying degree for active round ulcer of the stomach including excision of the lesion, segmental resection and more or less extensive subtotal resection of the stomach. In this series there were 2 deaths. In the period from 1909 to 1918 Bastianelli used the Murphy button but since 1918 he has preferred direct suture.

Stomach ulcers are generally considered to be infected and the danger of the infection is believed to be greater the less extensive the resection. Pauchet advises extensive resection but in the cases in which the author has done a circumscribed resection infection has never developed. Bastianelli has performed extensive resections only for the purpose of removing a large acid secreting surface. In none of his cases has a recurrence developed and in all of them the symptoms have been cured. Bastianelli states that gastrojejunostomy is an irrational and unphysiological operation. Roentgen examinations have shown that it does not hasten the emptying of the stomach, does not increase acidity, and does not free the gastric mucosa from prolonged contact with the stomach contents which are almost always hyperacid. Therefore the ulcer does not heal the pain

persists and there is danger of hemorrhage per foration and degeneration

Bastianelli has treated 17 cases of ulcer of the duodenum by duodenopylorogastroctomy and 45 cases of benign disease of the stomach including pyloritis very severe hyperchlorhydria with spasm of the pylorus and ptosis of the third degree by resection. In neither of these series of cases were there any deaths. Therefore he has performed a total of 137 operations for gastric and duodenal lesions with only 2 deaths a mortality of 1.46 per cent. He thinks that the high mortality in resection of the stomach for malignant disease is due to the malignancy rather than the operation.

AUDREY G. MORGAN, M.D.

Miller, C. J. A Study of 343 Surgical Cases of Intestinal Obstruction. *Ann Surg* 1929 LXIX 91

The mortality of acute complete intestinal obstruction ranges from 55 to 65 per cent. In 343 cases treated surgically during the last five years at the Charity Hospital and Touro Infirmary, New Orleans including all instances of complete obstruction with the single exception of postoperative ileus (non-mechanical obstruction) there were 209 deaths a gross mortality of 60.9 per cent. The unreviewed figures from the two hospitals which include all cases diagnosed as intestinal obstruction regardless of their degree or type show the mortality in each institution to have been slightly less than 40 per cent whereas the reviewed figures show that the mortality at the Charity Hospital was 65 per cent and the mortality at the Touro Infirmary was 50.5 per cent.

Delay in surgical intervention reduces the chances of recovery, the mortality rising approximately 1 per cent for each hour. Moynihan says that any mortality over 10 per cent should be regarded as the mortality of delay.

The alternatives are death or surgery and it is estimated that about 20 per cent of cases are operated upon with no more than a 1 or 2 per cent chance for recovery.

The responsibility for delay may be with the patient, the physician or the surgeon. The patient frequently treats himself for one or several days. Some patients are opposed to surgery preferring to trust themselves to the non-existent chances of recovery under medical treatment. Too frequently the physician is responsible for the delay giving cathartics and enemata and making laboratory tests. Taylor speaks of the inexcusable ignorance or carelessness of general practitioners who see these cases early and treat them medically thereby laying themselves open to actions at law for malpractice if not for manslaughter.

In 28 of the 32 cases reviewed in which operation was done after a delay in the hospital of from twelve hours to five days the surgeon was responsible for the delay and in this group there were 22 deaths.

Operation for intestinal obstruction involves not only relief of the obstruction but also management

of the damaged bowel and combating of toxæmia. It is only in the early stages that simple relief of the obstruction is sufficient. The sequelæ impairment of the circulation damage to the bowel wall with ultimate gangrene and the production of toxins are more important than the mechanical obstruction itself. In the late stages relief of the obstruction may be dangerous in permitting the release of toxic substances into the intact bowel or the return of circulation to a necrotic loop. Paralysis may persist after the relief of the mechanical obstruction. Toxæmia may be fatal in spite of drainage. Even when the patient is seen early while still in apparently good condition the toxins may have been produced in fatal quantities.

The clinical aspect is the essential one yet the classical symptoms may be absent in the operable stage. A carefully taken history frequently elicits premonitory symptoms and Moynihan states that most abdominal catastrophes mark an abrupt transition from the quiescent to the acute stage in a disorder of long standing.

Of the patients whose cases are reviewed by the author 21.2 per cent had been operated upon—most of them for a pelvic condition or appendicitis. The corresponding percentage in Finney's series of cases was 40. In 14 of the cases reviewed by Miller the operation had been done within the preceding three weeks.

The earliest symptom of acute intestinal obstruction is pain. This is usually sudden and acute at first colicky and intermittent and finally continuous. When the mesentery is involved it is continuous from the beginning. It originates about the umbilicus or in the epigastrium and later involves the entire abdomen. It is present in about 75 per cent of the cases.

Vomiting also occurs in about 75 per cent of the cases. Its character depends upon the site of the obstruction. The development of true fecal vomiting has been characterized by Haddley as not a symptom of disease but a sign of impending death. In some cases its appearance is prevented by the presence of the obstruction in the small bowel.

Absolute constipation is pathognomonic when present but is found in only about half of the cases. In intussusception and mesenteric thrombosis the frequent passage of thin watery blood stained stools is more usual than obstipation. Obstruction in the right half of the colon is manifested by obstipation and obstruction in the left half by diarrhoea. The higher the obstruction the longer the time necessary to demonstrate it.

Distention is present in only from one third to one half of the cases. It tends to be late in acute cases and is always late when the upper small intestine is involved.

Tenderness usually develops only after distention has occurred. Rigidity is found with localized peritonitis but is not constant. Its absence differentiates intestinal obstruction from inflammatory conditions. Visible peristalsis is pathognomonic but rare.

Of the cases reviewed by the author none presented the full classical syndrome.

Shock is marked in certain types of obstruction. It is always present in the early stages when the circulation is affected in the late stages with toxæmia and when there is extreme distention. The toxæmia of intestinal obstruction is almost universally believed to be allied to surgical shock.

As intestinal obstruction is not primarily inflammatory elevations of the temperature are not usual in the early stages. Subnormal temperatures are frequent. In approximately 71 per cent of the fatal cases reviewed the temperature was below normal or over 100 degrees F.

Elevation of the pulse rate with a subnormal or normal temperature is a valuable aid in the diagnosis. In the cases reviewed 70 per cent of the patients with a rate over 100 died and their deaths constituted 50.2 per cent of the total mortality.

Practically all white cell counts over 12,000 were in the cases of strangulated or circulatory obstructions. The chief chemical changes were a fall in the blood chlorides and a rise in the carbon dioxide combining power of the blood. There is a constant rise in the non protein nitrogen of the blood which when the patient is moribund may lead to a mistaken diagnosis of uræmia.

In the diagnosis a carefully taken history is of chief importance. The symptoms and their relation to each other should be thoroughly investigated and special attention paid to the character of the pain which is the chief diagnostic sign. Moynihan says that any acute abdominal pain not promptly relieved by a small dose of morphine indicates operation and other surgeons maintain that any abdominal pain in a previously well person which lasts more than six hours justifies surgical exploration. Subsidence of the pain may be misleading as it may be due to the development of gangrene.

The physical examination should include auscultation of the abdomen and digital rectal examination. In the late stages auscultation reveals absence of all sounds except pulsation of the aorta. Digital rectal examination may disclose an empty rectum with the walls crowding around the finger and above a sensation of tremendous intra abdominal pressure. Enemata will demonstrate obstipation only when the obstruction is in the lower bowel.

Laboratory procedures are of little help but analysis should be a routine procedure. A blood count is seldom of any particular value and determinations of the blood chemistry are of no aid. A ray examination with barium is contra indicated when obstruction is suspected.

Operation is justified when there is a reasonable suspicion of intestinal obstruction. Practically all conditions with which it may be confused are amenable only to surgical treatment. When cardiac pulmonary and renal disease are eliminated exploration is less harmful than delay.

The most frequent causes of intestinal obstruction in adults are hernia and malignancy. The most

common cause in children is intussusception. The small intestine is involved more frequently than the large intestine.

The higher the obstruction the more quickly the symptoms develop the more rapidly the toxin is formed the more serious the outlook and the greater the necessity for prompt surgical intervention. In obstruction of the colon the formation of the fatal toxin is slower but the prognosis is not correspondingly more favorable because in the majority of cases the condition is due to malignancy.

The author compares the mortality of the various types of pathological lesions in the cases reviewed with the mortalities reported by Souttar and Tuttle.

The mortality is directly related to the duration of the illness. In the cases reviewed the mortality for the first twelve hours (29.4 per cent) was higher than the corresponding mortality reported by Bowers (13 per cent), Tuttle (4 per cent) and Finney (5 per cent). Miller attributes the difference to the fact that many of the patients whose cases he reviews were ignorant and in such cases it is difficult to determine the duration of the condition exactly. He states that the mortality after the third day is generally agreed to be not less than from 50 to 60 per cent.

The type of operation performed must depend upon the patient's condition. Taylor's grouping of cases based upon the patient's condition is recommended. In cases of the first group the patient is seen early while in good condition and simple relief with routine care is sufficient. In cases of the second group the condition is still fairly good but drainage of the bowel is indicated for toxæmia either present or impending. In cases of the third group the patient is seen late his condition is poor toxæmia is as important as the primary obstruction and only drainage by jejunostomy is warranted.

In the cases reviewed resection of the bowel even with the added danger of anastomosis had a mortality of 73.8 per cent whereas the mortality of apparently conservative treatment of gangrenous or merely suspicious areas of the wall by invagination or plication was 97.5 per cent. Simple herniotomy had a mortality of 57.7 per cent due undoubtedly to unsuspected damage to the wall.

The success of any procedure is based upon its relation to the pathological lesion and the condition of the patient. The experienced surgeon is content if he saves life even if he does not complete his surgery.

A gangrenous bowel should never be left in the abdomen whether it is drained or not. The short circuiting operation of Handley is valuable but is limited in its application. Enterostomy is indicated whenever toxæmia is a factor. The loss of digestive fluids is decreased by the Witzel technique which also provides against the development of a fistula. In malignancy of the large bowel caecostomy should be a routine procedure. The two stage operation is generally preferable in this condition but immediate



anastomosis is almost essential when the small intestine is so involved as to require resection. Wilkie's method in which the fluid from an upper enterostomy is allowed to return through a lower enterostomy has considerable to recommend it.

The success of surgery in intestinal obstruction is based not upon the procedure adopted providing it stops the formation and absorption of the toxin, relieves the distention and establishes the fecal flow but upon the adaptation of that procedure to the conditions present in the particular case.

As intussusception and volvulus are prone to recur the faulty anatomy should be corrected if the condition of the patient permits.

It is almost universally believed that because of the state of shock the blood changes the inhibition of peristalsis and the possibility of postoperative vomiting which are associated with the condition spinal and local analgesia are preferable to general anesthesia and especially to ether anesthesia for operation in intestinal obstruction. The author doubts the wisdom of a general application of this reasoning. In the cases reviewed the mortality of operations performed under local analgesia was 20 per cent higher and the mortality of those performed under spinal analgesia was 10 per cent higher than the total mortality. Although ether was employed most frequently the mortality in cases in which local analgesia was induced was 30 per cent higher and the mortality in cases in which spinal analgesia was induced was 20 per cent higher than the mortality in cases operated upon under general anesthesia. Moreover the hospital using general anesthesia in only 45 per cent of the cases had a mortality 15 per cent higher than the hospital using general anesthesia in 91 per cent of the cases and the surgeon using general anesthesia most frequently had the lowest mortality. The duration of the operation averaged twenty eight minutes more in the cases in which local analgesia was used and twenty seven minutes more in those in which spinal analgesia was used than in those in which general anesthesia was employed. Prolongation of the procedure and the excessive manipulations under spinal and local analgesia are of necessity deleterious when speed and gentleness are essential. Moreover neither local nor spinal analgesia prolongs life.

However serious the patient's condition gastric lavage and the administration of normal salt solution by hypodermoclysis or infusion are essential. After operation the treatment should be based upon the requirements of the particular case. Continued gastric lavage is important. Chemical examination of the blood is essential as an index to the use of salt solution or glucose and insulin.

The work of Hermann at the Mayo Clinic in regard to prophylactic immunization presents a strong argument for the two stage resection as it seems to prove that the higher resistance of the patient at the second operation is due to the production of an active local peritoneal immunity from the soiling of the first operation.

Williams' use of anti gas serum is based on the theory that the toxemia is due to the bacillus welchii and seems to have possibilities.

Intestinal obstruction seems to be slightly more common in the colored race than in the white race and more common in males than in females.

In the cases reviewed the ages ranged from thirteen days to ninety two years but nearly half of the patients were between twenty and fifty years old. Thirty two and four tenths per cent were over fifty years of age.

In 16 cases treated medically the hospital mortality was 87.5 per cent. The removal of 2 patients from the hospital when they were nearly moribund explains why the mortality was not 100 per cent.

In conclusion the author emphasizes that prompt operation offers the only means by which the mortality of intestinal obstruction can be brought within reasonable limits. E. S. PLATT, M.D.

Smithies F, Weissman M and Fremmel F  
Tuberculous Enterocolitis. *J Am Med Ass* 1925  
201: 1953

This article is based on eighty cases of dyspepsia due to secondary involvement of the intestines by tuberculosis. Forty four of the patients were males. The average age of the patients was thirty two years and the average duration of the primary tuberculosis of the lungs was two and six tenths years. At the time of observation tubercle bacilli were found in the sputum in forty nine cases.

Intra abdominal tuberculosis rarely occurs primarily in the stomach or the proximal two-thirds of the small bowel but in 95 per cent of the cases it invades the terminal ileum, the cecum, the appendix, the ascending colon or the rectosigmoid. In the portions of the bowel there is a physiological decrease in the rate of flow of the intestinal contents. In enterocolonic tuberculosis, whether acute or chronic, there is interference with the normal neuromuscular mechanism.

Experience has shown that in approximately 60 per cent of the cases tuberculous enterocolitis begins as a relatively well localized lesion. Frequently its early localization is in the appendix or cecum. In the female there may be a peritoneal extension of tuberculosis in the fallopian tube or ovary. There is evidence that at times the intestines become infected by way of the blood stream. In such cases the lesions are apt to be multiple and diffuse involving both the ileum and the colon. In other cases the infection is carried by the lymph stream and the most marked changes occur in the terminal ileum.

The authors divide cases of tuberculous enterocolitis into the following three groups:

Group 1. Those in which there is a mildly active or quiescent pulmonary tuberculosis accompanied by dyspeptic disturbances and abdominal examination does not reveal any striking physical anomalies.

Group 2. Those in which there is an active or quiescent pulmonary tuberculosis associated with digestive disturbances of varying duration and

abdominal examination reveals mild and often localized physical anomalies

Group 3 Those in which the pulmonary tuberculosis is commonly active but occasionally quiescent and accompanied by pronounced digestive disturbances which are usually constant and abdominal examination reveals advanced physical anomalies

Of the cases reviewed seven belonged to Group 1 forty one to Group 2 and thirty two to Group 3

In cases of Group 1 the roentgen evidence is what is usually regarded as inferential Deforming lesions are difficult to demonstrate In cases of Groups 2 and 3 the roentgen studies almost uniformly reveal evidence of gross lesions seriously altering the shape of the terminal ileum and the colon

For cases in Group 1 in which the pulmonary lesions are not extensive and the bowel involvement is localized the authors advocate early exploratory laparotomy with removal of the localized disease whenever possible Tuberculosis of the appendix and fallopian tubes should be dealt with by excision In cases in Group 2 surgical exploration should be done only when the pulmonary lesion is not extensive or actively progressive and the bowel disturbance is limited In cases in Group 3 surgical measures are contra indicated

The diet given to patients with tuberculous enterocolitis should be such that little residue remains after digestive absorption Milk should be boiled or citrated When there is fever fluids should be pushed The fattening process common in the dietetic management of tuberculosis does more harm than good Heliotherapy seems to relieve the pain and increase the general comfort but there is considerable doubt as to whether it has a healing influence on intestinal lesions The bowel pains constipation and other symptoms of early enterocolitis may be relieved by the free use of liquid petrolatum This protects the ulcerated mucosa against the trauma of the intestinal contents In severe cases the use of opium bismuth or morphine is often necessary

JOHN W. NEZUM M D

Hellstrom J Choleic Acid Enteroliths (Zur Kenntnis der Choleinsäureenterolithen) *Acta chirurg Scand* 1928 lxxv 79

The author adds two cases of his own to the five cases of choleic acid enteroliths previously on record and reports the clinical histories and the results of chemical analysis of the stones in the seven cases

Although choleic acid stones are made up chiefly of a biliary acid they are formed in the intestine instead of the gall bladder This was proved by the fact that the gall bladder was found normal in the two cases reviewed in which it was examined by the presence of vegetable residue in the stones of two cases and by the presence of large numbers of bacteria in the stones in five cases

The stones seem to be formed as the result of a marked increase of choleic acid in the intestine conceivably due to an abnormally rich excretion of sodium glycocholate with the bile or as the result

of the union of deoxycholic acid and higher free fatty acids in the gut itself

The production and growth of choleic acid enteroliths seems to be favored by abnormal disintegrating processes due to bacteria as well as by mechanical factors such as strictures in the small intestines

All of the cases on record were those of women The youngest subject was thirty one years of age and the oldest seventy five

At operation the stones were found in different parts of the small intestine between the duodenojejunal flexure and the ileocecal valve In three cases they were associated with a tuberculous stricture Their weight varied from 2 to 45 gm The content of choleic acid was usually 75 per cent In one case multiple concretions were found In another a recurrence developed six years after the operation

There is no feature by which choleic acid enteroliths can be differentiated before operation from gall stones which have escaped into the intestine or ordinary intestinal concretions Their nature can be determined only by direct inspection and chemical analysis

Choleic acid enteroliths are dangerous and should be removed by operation No instance of their spontaneous discharge except partially by vomiting has been recorded

In the three cases reviewed in which the stone was associated with a tuberculous stricture intestinal resection was done with a good result In the others the stones were removed by enterolithotomy but two of the patients died

Stone H B Chronic Ulcerative Colitis *Pennsylvania M J* 1929 xxxi 271

Chronic ulcerative colitis is a condition of unproved etiology which presents a varied clinical picture It is resistant to treatment tends to recur causes grave disability and has a considerable mortality Treatment is in general unsatisfactory Three classes of cases may require surgical measures (1) the relatively mild group that fail to improve in spite of medical methods and result in chronic invalidism (2) the persistently recurrent cases and (3) the fulminant cases with great loss of weight marked anemia and asthenia In these three types of the disease operation should be performed before the general condition becomes critical and before systemic infection develops In general the operation of choice is ileostomy but under special conditions other surgical procedures may be preferable

MANUEL I. LICHTENSTEIN M D

Nelsen V The Injection Treatment of Hæmorrhoids *Acta chirurg Scand* 1928 lxxv 311

Having treated 1700 cases of varices by injection the author first reviews his impressions of this treatment which were published in the *Acta chirurgica Scandinavica* three years ago He states that in Denmark the injection treatment is now generally preferred to operative treatment for varices The

last advance is the use of a 50 per cent solution of glucose for the injection of small thin walled varices this agent being painless and producing no necrosis

In the treatment of hemorrhoids the injection method has been used by the author with good results in 100 cases. In one case however an abscess and anal fistula developed as the result of necrosis three months after the injection of an internal hemorrhoid. The indications for the injection treatment of hemorrhoids are the same as those for surgical treatment. The injections should be limited to chronic cases. As a rule it is only the internal hemorrhoids that cause symptoms. During the treatment proctoscopy with Berner's rectoscope is necessary.

The hemorrhoids are brought down outside of the anus by means of suction with Bier's cup or by making the patient to bear down against the exploring finger. An injection of about 1 c. cm. of novocaine is then given and followed by 1 c. cm. at the most of a solution containing quinine chloride 0.5 ethylurethan 0.25 and distilled water to make 2 c. cm. It must be borne in mind that the hemorrhoid may consist of a plexus of dilated veins or a simple varix.

Meusen believes that the injection method should take the place of surgery in the treatment of hemorrhoids because it is painless, does not confine the patient to bed, and does not require an anesthetic. He calls attention to the importance of discovering an agent which will exert an effect on an aseptic thrombus without causing necrosis and suggests that glucose might be such an agent.

#### LIVER GALL BLADDER PANCREAS AND SPLEEN

Lindquist S. Four Cases of Abscess of the Liver Following Appendicitis (Quatre cas d'abcès du foie consécutifs à l'appendicite). *Acta chirurg. S.* 1928 LXIV 253

The author reports four cases of abscess of the liver following acute gangrenous appendicitis with purulent peritonitis. In all of them there was an irregular (septic) fever and in Cases 1, 3, and 4 this was the only significant symptom during the greater part of the period of development of the condition. In no case was there any enlargement of the liver. In Cases 1 and 3 there was no pain at all and in Case 4 there was only slight pain on pressure.

In Case 1 in which the appendectomy was done the second day after the beginning of the appendicitis, the abscess probably developed from a retrocaecal infection about the thirteenth day after the operation. The patient died on the twenty-fourth day. Autopsy showed a solitary abscess in the center of the right lobe of the liver.

In Case 2 the appendicitis began with very severe symptoms—chills, icterus, the appearance of blood in the urine, and marked deterioration of the general condition. Autopsy revealed multiple abscesses in the liver.

Case 3 showed no symptoms except a septic temperature until the twenty-seventh day after the operation when X-ray examination revealed elevation of the diaphragm on the right side. At laparotomy a large abscess surrounded by small abscesses was found in the center of the right lobe of the liver. The patient died about fourteen days after the calculated day of the origin of the liver abscess and two days after the last operation. The origin of the abscess was probably a thrombophlebitis of the omental vein extending toward the portal vein.

Case 4 showed only a septic temperature until the thirty-fourth day after the appendectomy when the patient complained of slight pain opposite the ninth and tenth ribs and at this spot a slightly diminished resonance was noted. Puncture evacuated pus. Operation with resection of the tenth rib and the aspiration of about 40 c. cm. of pus was followed by recovery.

Cacconardi G. Multiple Miliary Abscesses of the Liver. Laparotomy and Vaccine Therapy. Recovery (Asscessi mulari multipli del fegato. laparotomia e vaccinoterapia guarigione). *Idea* 1928 LXIV 253

The patient whose case is reported was a man forty-seven years of age with no history of special importance except that he had had malaria when young. His present illness began in September 1926 with digestive disturbances and fever. The fever was at first slight but increased to 40 degrees F. and became continuous. The patient then had frequent chills and attacks of sweating in the morning. After about a month he began to have pain in the right hypochondrium and epigastrium but this lasted for only a few days and passed off slowly. There was no change in the feces. The urine was highly colored and showed bile pigments.

Injections of emetin and urotropin were without effect but after anti-prophetic vaccine treatment the patient was discharged well in three months. He remained well for about six months but in May 1927 he began to have high fever associated with intense pain in the right hypochondrium and vomiting.

At operation performed on May 29 1927 the spleen and liver were found enlarged and the whole surface of the liver covered with innumerable small yellowish white spots. Exploratory puncture did not show any large abscess and examination of the bile ducts was negative. As nothing could be done the abdomen was closed. Recovery was uneventful.

A few days after the operation vaccine treatment was begun again anti-colon bacillus and polyvalent anti-staphylococcus vaccines being given on alternate days. The dosage was at first 50 million bacteria and was increased to 3 billion. In addition intravenous injections of 5 c. cm. of 5 per cent urotropin were given. The general condition improved rapidly and the patient was discharged well on July 14 1927. Fourteen months after the operation he was still in excellent health with no fever, digestive disturbances, pain or vomiting. The

spleen was still enlarged but the liver had returned to its normal size

The lesions in this case could not have been amebic abscesses as in amebiasis the abscess is generally solitary the patient had never suffered from dysentery and treatment with emetin was ineffective. The route of the infection must have been a retrograde route from the duodenum. Excellent recovery resulted from a diet which spared the liver the intravenous injection of urotropin by podermoclysis vaccine treatment and exploratory operation

AUDREY G. MORGAN, M.D.

**Robbiani A.** The Late Results of Cholecystectomy for Calculous Cholecystitis (Estudio del post p rator) alejado de los colecistectomizados por colecistitis calculo a) *B l i s t d d i n g u r* 1928 15 85

Robbiani reports in detail 20 cases of calculous cholecystitis treated by cholecystectomy. The results show that cholecystectomy is an extremely valuable operation. Fifty per cent of the patients were completely cured and 45 per cent were greatly benefited.

Serious accidents following the operation are very rare. In reviewing the histories of 8,700 cases in which cholecystectomy was done the author found only 3 that required reoperation—2 for a new growth caused by the calculi and 1 for cicatricial constriction of the common duct. Sequelae due to periduodenal adhesions, recurrences, calculi overlooked or injuries of the common duct can be reduced to the minimum by a careful surgical technique and very careful exploration of the abdominal viscera near the gall bladder. Slight disturbances such as gastric symptoms and continuous subhepatic pain are often caused by periduodenal adhesions. Intermittent attacks of pain are evidently due to inflammation of the common duct. They are very frequently of the type of hepatic colic and are occasionally accompanied by fever and sometimes by a slight subicteric color but they are always shorter and much less intense than the attacks of pain preceding the operation. All of the author's patients with such disturbances led an active life and the symptoms tended to disappear with proper diet and medical treatment. The slight disturbances in the author's cases were not caused by insufficiency of the liver as functional tests showed hepatic function to be normal. In 80 per cent of the cases the cholesterol content of the blood was below normal while in 20 per cent it was slightly above normal.

Röntgenograms showed that periduodenal adhesions are almost always formed after the operation. Neither the technique used nor the method of drainage explains them. In some cases in which there was atrophic sclerosis of the gall bladder or intense pericholecystitis the roentgen malformations of the duodenum were greater. Even ideal cholecystectomy with perfect peritonization of the bed of the gall bladder does not prevent postoperative periduodenitis. Periduodenitis does not always cause

clinical symptoms and when it does produce them they are not proportional to the degree of roentgen malformation of the duodenum.

The Meltzer-Lyon test shows that when cholecystectomy has been performed recently the provoked bile has a poor concentration and is as pale as Bile A. In cases in which cholecystectomy has been performed some time ago there are 2 types of provoked bile. The first type is light in color and poor in concentration and the second is as dark as the B bile of normal subjects but lacks the concentration of a true B bile which is 3 or 4 times greater than that of A bile.

AUDREY G. MORGAN, M.D.

**Llambias J. Brachetto Brian D. and Orosco G.** Cancer of the Ampulla of Vater (Contribución al estudio del cáncer de la ampolla de Vater) *Semana med* 1928 xxxv 649

The authors report four cases of cancer of the ampulla of Vater. Three were those of men forty-two, fifty-one and forty years of age and one was that of a woman forty-one years of age.

The cardinal symptom of cancer of the ampulla of Vater, icterus from retention, usually develops early but under certain circumstances may not appear. The tumor is generally small and protrudes into the lumen of the duodenum. It may invade the muscular tunic of the duodenum as in one of the authors' cases and may extend to the pancreas as in two of the authors' cases. In the cases reviewed the incidence of extension into neighboring organs was very high. Metastases are rare, probably because retention of bile causes death before they have time to develop. In the authors' case with extension to the pancreas there were also metastases in the periduodenal glands, the liver and the pericardium. Cancers of common duct origin seem to be most frequent.

The clinical diagnosis of cancer of the ampulla of Vater is relatively difficult. The neoplasm may be confused with cancer of the head of the pancreas or of the bile ducts with ulcer and with lithiasis. Sometimes a cancer of the ampulla of Vater may cause reflex pyloric symptoms and conversely a lesion of the pylorus may cause vaterian symptoms.

It is impossible to make a histological classification of these tumors as each of the organs from which they may originate—the common duct, Wirsung's duct and the duodenum—gave rise to epitheliomata which cannot be differentiated from each other. These neoplasms are of a cylindrical type. They may or may not be purely acinous.

The treatment of cancer of the ampulla of Vater is surgical. Operation at least prolongs life, sometimes for quite a long time.

AUDREY G. MORGAN, M.D.

**Petermann.** Closure of the Abdomen without Drainage in Operations on the Bile Tracts (*Zur Frage der drainagelosen Bauchschlusses bei Operationen an den Gallenwegen*) *Zentralbl f Chir* 1928 p 2140

Petermann's report is to be considered a reply to the publication of Finnam who advocates primary

closure of the abdomen after all gall bladder operations. Petermann disagrees with Pribram on the basis of his results in a very extensive material. Petermann has employed charring of the mucosa, the so-called mucoclasia for many years. He agrees with Pribram that exact peritonealization of the cystic duct stump and the gall bladder bed is most important. Thus far he agrees with Pribram. However, he completely closes the abdomen only if the gall bladder bed is peritonealized, the liver bed is uninjured, and the cystic duct stump is satisfactorily closed and covered with peritoneum. The last however is not always possible, particularly if the common duct has been explored.

The author's objections to primary closure are based further on the fact that suture of the common duct is not always reliable, that drainage of the hepatic ducts is indispensable in severe cholangitis with pus and fibrin formation in the bile ducts, and that no unperitonealized surfaces can be left behind. The disadvantages of drainage mentioned by Pribram are not all due to the drainage alone, and it would be extremely dangerous if Pribram's recommendation were followed indiscriminately by inexperienced surgeons.

Petermann then discusses the late results of bile tract surgery. Of 680 patients who were followed up (80 per cent of the total number), 540 (85 per cent) were symptom free, 70 (10 per cent) had mild symptoms, 34 (5 per cent) were unrelieved, and 41 had a hernia. Most of the hernia followed mid line incisions. According to Petermann, adhesions are of little importance, only callous scars fixing the pylorus to the liver necessitate re-operation. Adhesion formation is reduced to the minimum by careful peritonealization of the gall bladder bed and restriction

of the use of packs. True recurrences are very rare. Petermann found new concretions in the common duct only twice. Squeezing of the gall bladder contents into the common duct should be avoided by first emptying the gall bladder with a water pump and then clamping or tying the cystic duct. Petermann has seen 5 stenoses of the common duct. Three were cicatricial and were carcinomatous. Some times so called recurrent colics are due to dilatation and tension of the bile tracts. Functional processes also play a rôle. According to Petermann's experience, the more marked the findings at operation, the better the results. Frequently the administration of a 10 to 20 per cent magnesium sulphate solution has a favorable effect. Pancreatitis is also a cause of late symptoms. In mild cases the treatment indicated is dietary measures and the administration of insulin. In severe cases surgery is necessary. Gastric and duodenal disturbances following operation are best treated dietetically. Petermann has seen definite gastric or duodenal ulcer 3 times. In 2 cases the lesion was certainly not present at the time of operation, but in the others it may have been overlooked. Chronic appendicitis and diseases of the kidney and ureters may also cause persisting symptoms. Petermann was able to demonstrate the very important fact that when appreciable late symptoms occur, the disease has usually existed for a long time before operation, therefore early operation should be performed.

In the discussion of this report, MARTENS and MEUSAM agreed with Petermann.

PRIBRAM again recommended his method in a lengthy presentation.

NORDMANN and BIER stated that general abolition of drainage is impossible. VOGLER (2)

# GYNECOLOGY

## UTERUS

Basset A. and Poincloux P. The Treatment of Metritis by Intramucous and Submucous Injections of Vaccine Local Vaccination (Traitement des métrites par injections intra et sous muqueuses de vaccins la vaccination régionale) *Gynec et obst* 1928 **xxviii** 289

This is a study of local immunization as applied to the uterus

The use of local vaccination requires a knowledge of the infecting agent and the tissue through which the infection has occurred. The object is to increase the resistance of the tissues constituting the portal of entry. In the case of the uterus this is accomplished by submucous and intramucous membrane injections of vaccine

The contra indications to this method of treatment are few pregnancy and a poor general condition (the latter especially when it is due to tuberculosis). The authors have had experience with all forms of metritis except the acute puerperal form

In the course of a three year study the following methods have been developed

The patient is carefully examined both from the general and gynecological standpoint. From the history some idea can usually be obtained as to the nature of the infection—as to whether it is gonococcal or puerperal. The local examination is made at least twenty four hours after a douche. Smears are taken from the cervix and for the culture mucus is placed in 6 or 8 c cm. of normal saline solution for transportation to the laboratory. The specimen is placed in bouillon and on ascites agar or blood agar. After from twenty four to forty eight hours colonies are picked and transferred for identification. The final cultures serve as a vaccine to which is added a stock gonococcal vaccine if it appears that the gonococcus was the original invader. The vaccine is heated just sufficiently to inactivate it

The treatment consists of from 4 to 10 injections made beneath the mucosa in the vaginal portions of the cervix that show pathological changes and finally in the mucosa of the canal. A 2 or 5 c cm. syringe is employed with an extension and a fine straight needle, an apparatus identical with that employed for the injection of an anæsthetic about the tonsil. The total quantity of vaccine administered at a single treatment is from 0.5 to 3 c cm. While the injections alone suffice it is believed advisable to dilate the cervix with a 3 valve Sims speculum or a long forceps before each treatment

There are no local effects of consequence but a general reaction often of considerable violence soon follows the injections. The usual symptoms are a

chill fever headache nausea and general malaise. When a gonococcal vaccine is used these symptoms appear within from fifteen to thirty minutes. The duration of the reaction is usually from three to six hours and occasionally from ten to twelve hours. Following the use of colon bacillus vaccine the reaction develops more slowly and may last twenty four hours and gastro intestinal disturbances are more prominent. As the treatment progresses the symptoms become less violent and this change parallels the progress of the cure

Of the women treated 29 were examined with regard to the end results. Nineteen (65 per cent) were completely cured, 8 (27 per cent) were greatly benefited and 2 were unrelieved. The last were suffering from severe tubal lesions which caused repeated re infections of the uterus. Of the patients cured some had salpingitis and parametritis. These lesions subsided with the metritis. In 5 cases there was involvement of the body of the uterus which caused persistence of the leucorrhœa. To treat this complication a special sound was devised to permit injections into the endometrium. The results were comparable to those obtained in the treatment of the cervical lesions

In the course of this study certain facts were brought out relative to the flora of the uterus. The organisms are classified as saprophytic and pathogenic. The saprophytic group include the coccus vaginalis (the same shape as the staphylococcus but with different staining qualities) and the bacillus vaginalis. Numerous varieties can be distinguished but they are without clinical interest. The pathogenic organisms include the gonococcus, colon bacillus, staphylococcus, enterococcus, streptococcus and diphtheroids

The gonococcus is not infrequently found in the smears but rarely in the cultures (3 times in 152 cases)

The bacillus coli is of great importance in uterine infections. It usually appears in the cultures rather than in the smears

The staphylococcus seems to play a minor rôle. The staphylococcus albus is the type usually found and relative to its pathogenicity it stands at the end of the long series of cocci vaginalis

The enterococcus plays a certain part in metritis but was found only 5 times in the series of cases reviewed

The streptococcus is quite often identified in smears but is grown with difficulty on culture media

Diphtheroids were identified 5 times

Other pathogenic organisms sometimes found are the pneumococcus, Friedländer's bacillus, Pfeiffer's bacillus and sarcinae

The disagreement between the information furnished by smears and cultures shows that bacteriological examination alone is not enough to establish the etiology of metritis. It is only by combining the bacteriological and clinical findings that an approach to a diagnosis can be made.

Certain facts concerning the relation of the causative organism to the reaction to the vaccine are brought out.

When an autogenous vaccine produces no reaction the organisms are of the non pathogenic or only slightly pathogenic variety. When an autogenous vaccine alone causes a reaction it usually contains colon bacilli, enterococci or staphylococci. When an autogenous vaccine produces no reaction but a stock gonococcal vaccine produces a reaction the patient is usually suffering clinically from a gonococcal infection. When an autogenous vaccine together with a stock gonococcal vaccine produces no reaction gonorrheal metritis may be eliminated from consideration. When an autogenous vaccine produces a reaction and this reaction is strengthened by a minimal quantity of gonococcal vaccine the patient is found clinically to be suffering from gonorrheal metritis.

On the basis of experiments on patients the authors advance the hypothesis that the general reaction is dependent not only on the use of the proper vaccine but also on the point of injection (that is to say the portal of entry of the original infection). This theory seems well supported by several case histories and adds another method of confirming the etiology of the metritis. The authors conclude that when a given vaccine is injected into the cervix or one of the vulvar glands and a general reaction follows the organism from which the vaccine was made may be regarded as the cause of the metritis.

The authors classify metritis into that of recent origin and that of long standing. The former includes the pure gonococcal metritis metritis due to enterococcus or bacillus coli occurring in women suffering from chronic intestinal disorders (an important group) and puerperal infections caused by streptococci, staphylococci, gonococci or the colon bacillus. The old cases are due to one of the same organisms with usually the addition of secondary organisms which often belong to the non pathogenic group. With this classification in mind it is possible to undertake an etiologic treatment which promises success in most cases. ALBERT L. DE GRAY, MD.

**Capecchi E. Acute Complete Retention of Urine and Delivery of a Large Fibromyoma.** (Ritenzione urinaria acuta completa e consegna anco parto di un voluminoso fibro mioma). *Cl. N. ost. I.* 1928 xxx 654.

The case reported was that of a woman forty four years of age who had had three normal deliveries. In October 1926 she began to have a more copious menstrual flow than usual, a discharge of sero sanguinolent fluid between the periods and a feeling of weight in the lumbar region. The symptoms in-

creased and on November 15, 1926 she suddenly became unable to urinate. Thereafter catheterization was necessary and there was pain which increased until it had the character of labor pain.

On the patient's admission to the hospital on November 19, 1926, examination showed a hard ovoid fibromyoma the size of the head of a fetus which occupied the vagina. Under ether anesthesia it was delivered by catching it with Museux forceps and giving it a rotating motion. It was attached to the anterior wall of the uterus and weighed 620 gm. There was no hemorrhage on its removal and the uterus quickly returned to its normal size.

Retention of urine is not an infrequent complication of fibroma of the uterus but it is generally incomplete. The pressure of the tumor and its traction on the ureter cause disturbances of the circulation of the bladder and pelvis until some added factor probably menstrual congestion exceeds the limit of tolerance and urination becomes impossible. The contractile capacity of the uterine musculature can be utilized in the removal of a tumor as well as in the delivery of a fetus. ALBERT L. DE GRAY, MD.

**Viana O. The Early Diagnosis of Cancer of the Uterus by Means of Smears.** (La diagnosi precoce del cancro uterino mediante lo striscio). *C. A. P. I.* 1928 xi 181.

As there is danger of stimulating the growth of cancer by excising tissue for examination Babes has recommended making the diagnosis from smears. According to Babes' technique the cervix is wiped with gauze and the material taken with a plain loop fixed with alcohol and stained. Cancer is characterized by penetration of epithelium into the deep tissues and atypical forms of epithelial cells. The latter appear first and can be seen in smears. Babes considers the smear method a limited biopsy.

In examinations of twenty cases by this method he found that in simple erosions erythrocytes predominate and there are few cells. In cancer the protoplasm of the cells is greatly reduced and often nothing is left but the nucleus. Sometimes there is more protoplasm and the cells have various forms. The nuclei may be fusiform, mulberry shaped, bilobulated or multilobulated. The greatest change in the cells is the increase in their size; they are often true giant cells. The nuclear chromatin may be in the form of oval semicircular or angular granules of varying size. The nucleoli also vary in number, size and staining capacity. Babes says that from these characteristics the diagnosis of cancer of the cervix can be made from smears in a large number of cases.

The author has examined twelve cases by the smear method and includes in his article photomicrographs which in many points confirm the findings of Babes. In one case examination of the smear indicated chorionepithelioma but this diagnosis was not confirmed by biopsy. In the cases of cancer the findings in the smears were confirmed by those of biopsy. ALBERT L. DE GRAY, MD.

Gellhorn C. Syphilis and Cancer of the Uterus  
*Am J Syphilis* 19 9 xii x

The author discusses first the differential diagnosis between syphilis and cancer of the cervix. A number of case histories are given to illustrate the mistakes in diagnosis. The differentiation is not always easy. In the cases of young patients syphilis should be thought of first. Even a definite history of syphilis does not exclude cancer.

Except in cases with ulcerated gummata spontaneous bleeding is less frequent in syphilis than in cancer but on touch cancer bleeds more easily than a syphilitic lesion. Pain on palpation seems to be greater in primary and secondary syphilis than in the early stages of cancer. A marked general reaction is produced early by syphilis but occurs late in cancer. The consistency of the new growth is a valuable diagnostic point. A syphilitic lesion is hard in the depths because of the infiltration. In cancer the finger can always break through into deeper layers to soft spongy tissue. Yellowish discoloration relieved by a reddish undertone is pathognomonic of syphilis. If in a suspicious case the affection is separated from the external os by a zone of normal mucosa the diagnosis of syphilis may be made safely. Microscopic examination settles the diagnosis in most cases. Spirochetes are usually recoverable from chancres always from secondary ulcers but rarely from gummata. Other affections of the cervix should be excluded. In doubtful cases anti-syphilis treatment should be given.

When cancer occurs in a syphilitic it will always seek the vulnerable spots which have already been involved by syphilis. Leucoplakia is almost always due to syphilis and may sooner or later develop into cancer. The direct transition of syphilis into cancer is rare.  
 T. LOYD BELL M.D.

Alamanni R. Carcinoma of the Uterus After the Menopause (Osservazioni sul carcinoma uterino oltre la menopausa) *Riv Ital di ginec.* 928 vii 57

The author has studied his cases of carcinoma developing after the cessation of menstruation to determine whether such carcinomata are different in nature and course from those developing during active sexual life. He found that carcinomata at the later age are somewhat less malignant and their clinical course is somewhat different. The most marked symptom is a yellowish or whitish discharge the copious hemorrhage caused by carcinoma developing at an earlier age is rare. In a few cases (18 per cent) the first symptom was abdominosacral pain. In some of them the patient had noted a discharge for only a little while but when examination was made the tumor had already passed the limits of operability. Brief histories are given of two such cases in one of which the patient had noted a discharge for only five days before she entered the hospital and in the other of which a discharge had been noted for only a month. Sometimes however the period is very long. Two other cases are reported

in which the patient had had a discharge for five years.

The average duration of the disease was from three to four years whereas in women in active sexual life the average duration ranges from a few months to a year. Women in the menopause do not show so much physical deterioration or cachexia as younger women. Apparently the older organism is more resistant to the diffusion of the cancerous process and less sensitive to its toxins. The older women frequently die from intercurrent disease rather than from the cancer itself.

Of the author's cases 55.22 per cent were inoperable whereas the incidence of inoperability in younger women is 50 per cent. The higher incidence of inoperability after the menopause is probably due to the mildness of the symptoms which delays the diagnosis. Recurrence is less frequent in the late cases it developed in only 9.10 per cent of the author's cases as contrasted with 30 per cent of the cases of younger women reported by Faure.

Alamanni obtained good immediate results in fifty-one (86.44 per cent) of his fifty-nine cases. The operative mortality was 15.25 per cent. Eighteen of the patients are now living with no signs of recurrence after a maximum time of eight years and a minimum time of three years.

Alamanni states that simple total abdominal hysterectomy is as effective in these cases as Wertheim's operation and less dangerous.

He attributes the decrease in the malignancy of carcinoma after the menopause to functional changes taking place at middle age particularly the decrease in the activity of the ovary and chromaffin system. It is not due to the histological type of the cancer as the lesions in most of his cases were pavement cell epitheliomata which are not particularly benign cancers.  
 AUDREY G. MORGAN M.D.

Schneidewind O. A Case of Primary Polymorphous Sarcoma of the Uterus with Various Metastases (Un caso de sarcoma primitivo poli morfo de útero con metástasis diversas) *Semanari md* 1928 xxxv 759

The patient whose case is reported was a woman fifty-four years of age who was admitted to the hospital with a diagnosis of fibroma of the uterus which had undergone malignant degeneration. Subtotal hysterectomy and bilateral oophorosalphigectomy were performed. Death resulted.

Autopsy showed that the lower part of the uterus was changed into a yellowish white mass with slight ulceration. In the ascending colon there was an ulcerated tumor the size of a mandarin orange which protruded into the lumen of the intestine. In the ileum there was a hard white tumor the size of a bean. The abdominal cavity contained about 1½ liter of hemorrhagic fluid. In both lungs there was a series of metastatic nodules ranging in size from that of a nut to that of a mandarin orange. There was an intense pleural reaction. In the heart there were pleuropéricardial adhesions and 2 metastases. The



posterior angles of the first 4 ribs and the anterior angles of the first 2 ribs on the right side had been invaded by the tumor. Examination revealed also fatty degeneration of the liver congestion and edema of the lungs and atheroma of the aorta.

The tumor was a spindle celled sarcoma of the uterus evidently originating from malignant degeneration of a fibroma. Signs of malignancy were noted for only a few months before the patient's admission to the hospital. Sarcoma of the uterus is rare. In 1925 Buntin said that only 353 cases had been reported. Round and oval-celled sarcomata are in general much more malignant than spindle celled sarcomata.

AUDREY G. MORGAN M.D.

#### ADNEXAL AND PERIUTERINE CONDITIONS

Orr J. L. An Unusual Case of Tubo Ovarian Inguinal Hernia. *Glasgow M J* 1929 cxv 21

The case reported was that of a girl sixteen years of age who had a painful inguinal hernia on the left side for twelve months. The pain was most severe during menstruation. At operation the hernial sac was found to contain the ovary and the distal part of the fallopian tube. The proximal portion of the tube ended blindly.

Orr reviews the literature on malformations of the tubes and gives a brief account of the embryology of the internal genital organs in the female. Tubal malformations have been ascribed to an error in development and to fetal peritonitis. Neither theory is entirely satisfactory but the developmental theory seems to be the more acceptable.

T. FLOYD BELL M.D.

Callahan W. P., Schlitz F. H. and Hellwig C. A. Primary Carcinoma of the Fallopian Tubes Associated with Tuberculosis. *Surg Gynec & Obs* 1929 xlviii 24

The simultaneous occurrence of primary carcinoma and tuberculosis of the fallopian tubes is exceedingly rare.

The diagnosis of tuberculosis of the tubes is difficult to make clinically because of the absence of distinctive clinical symptoms. Frequently it is impossible without microscopic examination. The condition is most common between the ages of twenty and forty years. The infection is rarely primary in the tubes. As a rule it reaches the tubes by way of the blood stream by direct extension from the peritoneum or from the lower genital tract.

From twelve to forty eight hours before the menstrual flow pain and tenderness are noted in the lower part of the abdomen. As a rule there is a slight elevation of the temperature toward evening. In most cases pelvic examination reveals induration in the fornices fixation of the cervix enlargement and retrodisplacement of the uterus and marked adhesions between the tubes and the ovaries. The adnexa and inguinal glands may be greatly enlarged. Sterility usually results because as a rule the condition is bilateral.

The onset is insidious. In most cases there is a history of pleurisy and enlarged glands. A primary tuberculous lesion elsewhere eliminates gonococcal and streptococcal salpingitis. A definite diagnosis may sometimes be made from curetted material.

Opinions vary as to the advisability of surgical treatment although the incidence of permanent cure in surgically treated cases has been reported as 66 per cent.

Primary carcinoma of the tubes occurs most frequently in the late premenstrual or early postmenstrual period between the fortieth and fifty-fifth year. The most constant symptoms are pain a discharge irregularity of menstruation and cramp-like continuous or intermittent pain in the hypogastric iliac or lumbar region on the same side which may radiate to the sacrum the lower extremities the rectum or the epigastrium and is sometimes relieved by a profuse discharge from the vagina. The discharge is usually of a watery and serous nature but may be white or leucorrhoeal. At times it has an offensive odor.

Physical examination reveals a mass in the pouch of Douglas or on one or both sides. The mass varies in size from that of an egg to that of a man's head.

The results of surgery are often poor because the operation is too conservative the uterus or ovaries being left or because tubal contents escape into the abdominal cavity.

Primary carcinoma associated with tuberculosis of the tubes has been found most frequently in women between the ages of thirty-five and fifty-two years. In most of the reported cases the pathological picture suggested that the inflammatory process antedated the neoplastic growth. Some investigators have assumed a direct relationship between the lesions but it is generally believed that one is an accidental complication of the other. Early radical operation gives the only chance of cure.

MAONIS P. URBES M.D.

Schott P. Experimental Studies on Injury to Offspring from Roentgen Irradiation (Experimentelle Untersuchungen über Schädigung d. r. Nachkommen durch Röntgenstrahlen). *Strahlentherapie* 1928 xxviii 546

Sixty mice free from inbreeding were irradiated with 140 70 54 42 27 21 14 and 9 roentgen units from a Marx Coolidge tube (180 kv 2 ma 1/2 mm Cu plus 3 mm Al) and fifty-three mice were irradiated with a soft tube (100 kv 2 ma 1 mm Al). After irradiation they were paired in every possible combination in the different generations.

From the numerous tables and combinations for which the original article must be consulted it is evident that the irradiation caused injury to the offspring which was manifested by underdevelopment and decreased fertility. Injury to the offspring evidenced by malformations due to intrauterine disturbances of development resulting from irradiation injury to the uterus could not be demonstrated.

BOUNTEN (G)

# OBSTETRICS

## PREGNANCY AND ITS COMPLICATIONS

Lyon E G Jr Anæmia in Late Pregnancy *J Am M Ass* 1928 xcii 11

This article is based on blood counts and hæmoglobin determinations made during the third trimester of pregnancy in the cases of 200 women delivered in the obstetrical division of the Woman's Hospital New York. In the 177 cases in which the determinations were made at term the average hæmoglobin was 75.3 per cent. Fifty-seven (32 per cent) of these 177 patients reached term with a hæmoglobin value of 70 per cent or less. Parity and toxæmia did not materially affect the degree of the anæmia.

Of a control series of 100 non pregnant women with retroversion of the uterus a similar percentage were found to have a hæmoglobin value of 70 per cent or less on admission to the surgical wards.

Of 41 women who had repeated blood counts during the third trimester of pregnancy 16 (38 per cent) showed a gain and 26 (47.6 per cent) a fall in the hæmoglobin.

CARL H DAVIS M D

Evans W Severe Anæmia of Pregnancy and the Puerperium *Lancet* 1929 ccxvi 14

Severe anæmia of pregnancy and the puerperium is uncommon. Osler attributed it to hæmolytic agents produced in the changed metabolism of pregnancy or the katabolism of the postpartum state. Rowland assumed that under normal conditions a syncytial hæmolyisin is formed in the ectodermal cells of the chorion during pregnancy and that later an anti-hæmolyisin is found in the maternal blood. He ascribed persistent anæmia to failure of the formation of the anti-hæmolyisin. Smith considered a deficiency of hydrochloric acid a probably etiological factor and as treatment recommended the administration of hydrochloric acid. Other conditions which have been suggested as predisposing to anæmia in pregnancy and the puerperium are achlorhydria and general debility before pregnancy, syphilis and a predisposition to anæmia.

The anæmia of pregnancy simulates Addisonian anæmia being characterized by a great reduction in the erythrocytes, the presence of primitive red cells, an increase in the reticulocyte count, slight splenic enlargement and a favorable response to liver therapy.

When once established the condition tends to recur in later pregnancies and in each succeeding pregnancy is more pronounced and earlier in onset. Premature labor is the rule.

It is important to recognize the disease in its initial stages and to begin treatment before labor. The prognosis is good, the response to liver therapy being almost immediate.

MAGNUS P URNES M D

Westman A Two Cases of Necrosis of the Renal Cortex in the Toxicosis of Pregnancy *Acta obst et gynec Scand* 1928 vii 235

The author describes the renal changes in two cases of eclampsia. In one of them he found cortical necrosis caused by thrombosis of vessels followed by infarction and in the other a nephrosis associated with necrosis.

Falls F H The Diagnosis of Fetal Deformities in Utero *Am J Obst & Gynec* 1928 xvi 801

The diagnosis of fetal deformity is very important from the standpoint of both the mother and the child. When the fetus is markedly deformed—for example an anencephalic monster—the management of the case may be planned solely in the interests of the mother.

The methods of diagnosing fetal deformity include palpation, percussion, auscultation and X-ray examination. By means of the X-ray a certain diagnosis can be made in practically every case after the seventh month.

Hydranmios developing about the seventh month and associated with a permanent increase of the uterine tension and easy ballottement is suggestive of fetal abnormality but is not constant. Inability definitely to outline the fetal head suggests anencephaly while abnormal size or consistency of the fetal head indicates hydrocephalus. In cases of anencephaly considerable difficulty is experienced in differentiating between the fetal poles by palpation and when the presentation is cephalic a soft meningocele surrounded by a bony ring may be felt on vaginal examination with the finger inside the cervix.

When there is marked hydranmios the fetal heart tones are heard only faintly or not at all. During pregnancy they are usually normal or rapid but during labor they are often slow and irregular or abnormally fast. In cases of anencephaly with a cephalic presentation they are frequently heard unusually low in the abdomen during labor and are very irregular.

Abnormally active movements of an anencephalic monster may become convulsive if pressure is made on the head.

HARVEY B MATTHEWS M D

Siegert F The Problem of the Cervical Placenta (*Zur Frage der Cervix placenta*) *Zischr f Gebn isk u Gynaek* 1928 xciii 744

There is still a difference of opinion as to the functional significance of the isthmus which is bounded above by the anatomical internal os and below by the histological internal os. Pankow emphasized the importance of the isthmus as a third segment of the uterus. Zangemeister believed the isthmus to be of

no obstetrical significance but of decided importance in the etiology of placenta prævia.

It has not been proved that the development of the isthmus finds its physiological boundary at the histological internal os.

The author discusses at length the question as to whether in the formation of the cervical placenta the isthmus remains distinct or it is unnecessary to assume a division of the uterus into three parts from the standpoint of function. A primary insertion and complete development of the ovum in the cervix of the uterus has been described only by Tarnier and Devraigne Bar. A cervical placenta may develop from or over an isthmic placenta. The author describes in detail a cervical placenta in a twenty-seven year-old para iv. The first severe hæmorrhage began with labor. Cæsarean section and manual removal of the placenta were done. The placenta had a corpus portion measuring 15 by 15 cm. a ring shaped lobe adherent in the lower uterine segment and a tongue like process in the cervical canal extending nearly to the external os. The removal of the placenta was accomplished quite easily. It is assumed that in this case the implantation in the cervix occurred from a primary corpus placenta by means of a reflex placenta.

The depth of the placental attachment to the cervical wall depends upon the extent and degree of the previous development of the cervical canal. Not every cervical placenta is a placenta accreta.

It is difficult to say whether the histological internal os can be differentiated histologically in the development of a cervical placenta as the destruction of the glands in the region of the placental tissue usually makes the differentiation of the cervical and isthmic glands impossible.

The decidual reaction has been described very differently and presents no constant picture. The most detailed description of this reaction has been given in reports of the relatively uncommon cases of wall splitting cervical placenta (Kermauner Krause Zengemeister Tiegell). It is generally believed that when the placenta is situated entirely below the internal os the decidual reaction of the mucosa of the corpus is surprisingly slight. Histological examination of the mucosa permits a differentiation of the isthmus and cervix only when the placenta does not extend below the histological internal os.

The type of placental insertion also varies. Placenta accreta is frequently due merely to deficiency or absence of a decidual reaction in the uterine outlet. The dissecting type of growth of the cervical placenta is peculiar in that by means of it the cervical wall is separated into two layers. The placental tissue does not penetrate through the mucosa into the muscle wall, but enters the cervical wall from above in such a way that the placenta is covered on one side by a layer of muscle and on the other side by a layer of muscle and mucosa.

Even though the development of the isthmus during pregnancy is to be regarded as physiological

there still remains the question as to how the lower margin of the isthmus the histological internal os reacts to this developmental process. This is not explained by a sphincter action of the wall muscle hindering the possibility of growth of the uterus. Nor does the gland picture the decidual reaction or the character of insertion of the placenta prove that in the invasion of the cervical canal by placental tissue from the isthmus the boundary of the histological internal os is protected. The entrance of the placenta into the cervix may be due to active growth of the placenta or to a passive sinking of the placental lobe covering the internal os into the dilating or already dilated cervix.

The primary isthmic placenta comes into contact with the mucosa of the cervix earlier and more extensively the more defective the closure of the cervix. Extrachorial development of the placenta in the cervix is favored by a preformed space. The sinking of a placental lobule into the dilated cervix is easier when the development of the cervical lobule is followed in the last months of the pregnancy by progressive dilatation of the cervical canal. In such cases the danger of hæmorrhage is relatively slight.

As important as the division of the uterus into three parts may be in the etiology of placenta prævia it does not explain the histological and functional cervical placenta. The latter is seldom a covering lobe as a rule it is an offshoot. Therefore it is not a placenta prævia but a placenta lateralis cervicalis. HERN (G)

Browne F J and Dodds G II. Further Experimental Observations on the Etiology of Accidental Hæmorrhage and Placental Infarction. *J Obst & Gynec B t Emp* 1913 xxxv 66

In experiments on animals the authors found that the chief predisposing cause of accidental hæmorrhage is chronic nephritis. In the presence of chronic nephritis antepartum hæmorrhage could be precipitated on the twentieth day by producing an acute exacerbation of the nephritic condition by injecting sodium oxalate uranium nitrate or the bacillus pyocyaneus. Three animals with chronic nephritis had a spontaneous antepartum hæmorrhage in the second half of pregnancy. In the cases of such animals albumin may be absent from the urine between pregnancies and during the early months of pregnancy and appears during the latter half of pregnancy and before the onset of spontaneous hæmorrhage. This observation seems to have an important bearing on the question of so called recurring toxæmias of pregnancy. The cause of the hæmorrhage is probably the failure of the kidney to excrete the toxins which accumulate in the circulation. The liver function remains normal in animals suffering from experimentally produced nephritis. As the blood cultures are found to be sterile during the bleeding it is evident that microorganisms have no part in the etiology of accidental hæmorrhage.

ABRAHAM A BRAUER M D

## LABOR AND ITS COMPLICATIONS

**Esmann V. Induced Premature Labor in Sixty-five Cases of Contracted Pelvis** (Sur 65 cas d'accouchement prématuré provoqué dans les basses rétrécies) *Gynéc et obst* 1928 xviii 491

Among more than 7,200 deliveries the author has induced premature labor in 65 cases of contracted pelvis. In the first group of 10 cases which were seen in the period from 1903 to 1912 he used a Tarnier balloon. Five of the infants lived and 5 were born dead or died soon after birth. In 4 cases there was a breech presentation.

Esmann attributed the frequency of breech presentation to the use of the balloon. Therefore in the 55 other cases he employed laminaria tents. After dilating the cervix with a metal dilator by Hegar's method he introduced from 2 to 4 thick laminaria tents, placed a square of iodoform gauze in front of the external os and tamponed the vagina with a *de le* cotton. When the tampon and the tents were withdrawn after from eighteen to twenty-four hours dilatation of the os and rupture of the membranes were usually accomplished easily. In a few cases it was necessary to repeat the introduction of the tents.

By this procedure a beginning of labor is brought about before the membranes rupture. In 30 of the cases reviewed labor was terminated within twenty-four hours and in 21 within twelve hours. In 1 case however delivery could not be terminated with forceps until ten days after the first introduction of the laminaria tents. The child lived.

In the 55 deliveries in the second group of cases there were 5 dead infants. All of them were delivered in the first 27 cases.

The 65 mothers left the hospital in good condition. The author states that if he were repeating the delivery in 5 of these cases—4 in the first group and 1 in the second—he would perform a cesarean section. In the induction of labor it is important for the fetus to be in an upright position, preferably in head presentation. When it is in a transverse position cesarean section should be done.

In the author's practice there are not many cases of marked pelvic deformity due to rickets but there are a considerable number of cases of generally contracted pelvis, well formed but small, measuring from 1 to 2 cm less in diameter than the normal pelvis. In such cases and in cases with mechanical disproportion between the size of the pelvis and that of the head because of abnormal size of the head the induction of labor is indicated. This is best done in the thirty-sixth or thirty-seventh week of pregnancy at which time the child is well developed and viable.

AUDREY G. MORGAN M.D.

**Rizzacasa N. A Case of Spina Bifida Occulta and Rupture of the Symphysis of the Pubis** (Su un caso di spina bifida occulta e sulla rottura della sinfisi pubica) *Chir. ost.* 1928 xxx 564

The patient whose case is reported was a primipara thirty years of age. Examination showed a

generally contracted non rachitic pelvis of the first degree. After many hours of labor with complete distention of the os the author applied forceps because of beginning fever and weakening of the fetal heart sounds. Following several ineffective tractions he found that the fetal heart was no longer beating and decided to perform a craniotomy. Before he undertook the craniotomy however his assistant made another attempt to effect delivery with the forceps. In a lateral movement the anterior arch of the pelvis suddenly yielded and the child's head was immediately delivered. As the patient was anesthetized she experienced no pain. The symphysis remained intact but there was a subcutaneous rupture of the pubis just to the right of it. The child's head was normal in size but as there was complete ossification moulding had been impossible.

For a few days after delivery the patient was unable to move her right leg but three weeks later she had no symptoms of any kind.

After about three years she became pregnant again and was delivered of a normal child spontaneously at term.

Roentgen examination of the patient showed in addition to the generally contracted pelvis an occult spina bifida. Evidently infantilism of the pelvis had contributed to the rupture of the os pubis.

AUDREY G. MORGAN M.D.

**Couveture A. Portes L. and Digonnet L. Late Postpartum Hemorrhages: Indications for Their Treatment by Immediate Hysterectomy** (Les hémorragies tardives des suites de couches: indications de leur traitement par l'hystérectomie démolée) *Gynéc et obst* 1928 xviii 370

It has generally been supposed that postpartum hemorrhages are always due to retention of a fragment of placenta in the uterus. This however is not true. Among twenty successive cases of postpartum hemorrhage observed by the authors retained placenta was found in only eleven; in nine the uterus was completely empty.

The seriousness of postpartum hemorrhage whether there is partial retention of placenta or not depends not so much on the amount of the hemorrhage as on the associated infection of the uterus. The uterine infection may remain latent until the beginning of the hemorrhage and may be disseminated by exploration or curettage. In the five cases in the authors' series in which no intra-uterine operation or examination were performed there were no deaths whereas in the ten cases in which curettage was done there were six deaths. Retained placenta was found in seven of the ten cases treated by curettage. In the seven cases with retained placenta which were treated by curettage there were three recoveries (one with bilateral phlebitis of the leg) and four deaths from septicæmia (one in spite of vaginal hysterectomy). In the three cases treated by curettage in which no retention of placenta was found there were two deaths—one from another hemorrhage and one from septicæmia.

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HEYM (G)

Browne F J and Dodds G H. Further Experimental Observations on the Etiology of Accidental Hæmorrhage and Placental Infarction. *J Obst & Gynec Brit Emp* 1918 xxxv 661.

In experiments on animals the authors found that the chief predisposing cause of accidental hæmorrhage is chronic nephritis. In the presence of chronic nephritis antepartum hæmorrhage could be precipitated on the twentieth day by producing an acute exacerbation of the nephritic condition by injecting sodium oxalate uranium nitrate or the bacillus pyocyaneus. Three animals with chronic nephritis had a spontaneous antepartum hæmorrhage in the second half of pregnancy. In the cases of such animals albumin may be absent from the urine between pregnancies and during the early months of pregnancy but appears during the latter half of pregnancy and before the onset of spontaneous hæmorrhage. The observation seems to have an important bearing on the question of so called recurring toxæmias of pregnancy. The cause of the hæmorrhage is probably the failure of the kidney to excrete the toxins which accumulate in the circulation. The liver function remains normal in animals suffering from experimentally produced nephritis. As the blood cultures are found to be sterile during the bleeding it is evident that microorganisms have no part in the etiology of accidental hæmorrhage.

ABRAHAM A BRAUER MD

lasting one hour) although the pelvis was contracted. For the first few days the infant nursed regularly. Then its temperature rose and there appeared within a few hours a bulging of the fontanelle, trismus, stiffness of the neck, the Kernig sign and contracture of the lower extremities in extension. Spinal puncture performed several times withdrew a yellow fluid which was under slightly increased pressure. The fluid contained numerous erythrocytes. As the mother presented a slightly positive Wassermann reaction anti-syphilis treatment of the infant was instituted. Purpuric spots appeared on the extremities and death occurred on the tenth day. Autopsy showed a purely meningeal hæmorrhage and hæmorrhagic foci in the liver, kidneys and lungs.

Case 2. The patient was a primipara twenty-five years old with a contracted pelvis. A cesarean section was performed under spinal anæsthesia. The infant was slow to breathe. Lumbar puncture evacuated a bloody fluid. On the third day the spinal fluid was xanthochromic and still under increased tension. Generalized convulsions developed and death occurred on the twenty-sixth day.

Case 3. The patient was a para II with a contracted pelvis. Labor was induced two weeks before

term. On delivery the infant breathed but did not cry. In the left temporoparietal region there was a slight swelling. This swelling increased in volume and the infant was seized with contractures of the legs in extreme flexion. Lumbar puncture evacuated a bloody fluid. Death occurred two days later. At autopsy a purely meningeal hæmorrhage was found.

Case 4. The patient was a woman twenty-two years old at term. The pelvis was slightly contracted. Premature rupture of the membranes occurred. The total duration of labor was twelve hours and thirty minutes and the duration of the second stage one hour and thirty minutes. Resuscitation of the infant was difficult. Death occurred on the second day. Autopsy showed only marked hyperæmia of the brain and other viscera.

From these case histories the following conclusions are drawn.

Although intracranial injury is known to be produced by forceps operations, these operations are not always responsible. Predisposing causes of hæmorrhage such as prematurity, alcoholism in the parents and especially syphilis must be considered. In certain cases the meningeal hæmorrhage is merely the dominating manifestation of a hæmorrhagic dyscrasia.

ALBERT F. DE GROAT, M.D.

in spite of a secondary hysterectomy—and one recovery. In five cases in which immediate hysterectomy was performed on account of the seriousness of the condition there was one death which occurred in one of the two cases of this group without placental retention.

The authors conclude that when a detached piece of placenta is found in the vagina, cervix or uterus it should be removed digitally if possible, but if it is adherent hysterectomy should be performed at once without preliminary curettage. Hysterectomy should be performed also in cases in which the uterus is empty if the fever which follows the examination does not recede within forty-eight hours or if another hemorrhage occurs. Abdominal hysterectomy is best because vaginal hysterectomy is difficult technically after delivery. AUDREY G. MORGAN, M.D.

### PUERPERIUM AND ITS COMPLICATIONS

**Autefage.** Grave Puerperal Infections Cured by Hysterectomy (Infections puerpérales graves guéries par hystérectomies). *Bull. Soc. d'obst. et de gynéc. de Par.* 1928 xvii 723.

Autefage reports a case of postabortion infection and a case of postpartum infection in which hysterectomy followed by Mikulicz drainage resulted in prompt recovery.

In the author's opinion hysterectomy is indicated in puerperal infection when after an abortion the temperature remains high and chills persist in spite of complete evacuation of the uterus and when a subacute infection occurs after labor with marked systemic symptoms and appreciable lesions of the uterus and adnexa.

Surgical treatment has no place in the hyperacute postpartum infections without localized symptoms.

The operation of choice is abdominal hysterectomy rather than vaginal hysterectomy principally because the former is better performed by most surgeons. The use of the Mikulicz drain is of great importance.

ALBERT F. DE GROOT, M.D.

### NEWBORN

**Pigeaud, H.** The True Causes of Fatal Meningeal Hemorrhage in the Newborn (Les causes réelles des hémorragies méningées mortelles chez le nouveau né). *Gynéc. et obst.* 1928 xviii 334.

A study of the present day literature dealing with meningeal hemorrhages in newborn infants indicates that the majority of those writing on the subject attribute the condition almost exclusively to obstetrical trauma. The conclusions drawn in this article are entirely to the contrary.

One of the first obstetricians to recognize that other causes might contribute to the production of intracranial hemorrhages was Couvelaire. Couvelaire noted the faculty with which hemorrhages are produced in premature and congenitally syphilitic infants. About the same time Lequeux showed that the severe hemorrhages of the newborn may be the

result of hereditary infectious or toxic conditions, the most important being alcoholism, lead poisoning and especially syphilis in the parents. Keene, Demelin, Warwick and Ballantyne have reported numerous cases of meningeal hemorrhage following normal labors or even caesarean sections in which there was minimal trauma to the infant.

In fifty autopsies Pigeaud found thirteen cases of meningeal hemorrhage. Six of the labors in these thirteen cases were spontaneous and entirely normal; five were normal up to the moment that the condition of the fetus necessitated delivery (low or mid forceps without trauma) and two were rendered difficult by mechanical causes.

Autopsies showed lesions of congenital syphilis in four cases. In four others the autopsy findings together with the clinical evidence made the diagnosis of syphilis practically certain. In one case death seemed due to an intoxication (severe nephritis in the mother) and in another to an acute infection (acute inflammatory lesions of the lungs, meninges and kidneys). In three cases death could be attributed only to the traumatism of labor. In two deliveries was effected by forceps. In one the delivery was difficult. The remaining case was a difficult breech extraction.

In the course of autopsies performed on fetuses of four or five months born with the membranes intact (that is to say without trauma) meningeal hemorrhages were found six times.

From his studies the author draws the following conclusions:

1. Purely traumatic intracranial hemorrhages occur in the newborn but are rare. In cases in which the labor and the fetus were normal they have not been demonstrated.

2. The majority of fatal meningeal hemorrhages have an etiology that is essentially medical—as a rule a hereditary defect such as a toxæmia or a chronic infection, usually syphilis. Rarely the cause is an acute infection.

3. Obstetrical trauma generally plays only an accessory rôle. It brings into evidence congenital lesions which alone are capable of producing meningeal hemorrhage.

ALBERT F. DE GROOT, M.D.

**Andérodus and Dervillé.** Several Cases of Meningeal Hemorrhage of the Newborn Following Spontaneous Delivery (Sur plusieurs cas d'hémorragie méningée du nouveau né à la suite d'accouchements spontanés). *Bull. Soc. d'obst. et de gynéc. de Par.* 1928 xvii 693.

When a labor is complicated by dystocia necessitating the application of forceps and when the infant presents signs of meningeal hemorrhage there is a natural tendency to consider the obstetrical operation as the cause of the hemorrhage. This is of course an exaggeration. The authors report four cases in which meningeal hemorrhage occurred in the course of labors terminating spontaneously.

Case 1. The patient was a twenty-year-old primipara at term. Labor was normal (second stage

In a series of sixteen patients with definitely abnormal urinary findings and definite impairment of renal function the blood urea averaged 15.9 mgm two hours after the ingestion of the urea and there were individual increases to more than 18 mgm. At the end of fourteen hours the average residual was 10.3 mgm. In about half of the cases there was a polyuria of over 750 ccm. The ingestion of the urea did not influence the clinical condition or cause discomfort. In two cases of uræmia the blood urea continued to rise during the fourteen hour period, an observation demonstrating that the kidneys were unable to eliminate not only the urea given but also the urea produced by catabolism of the tissues. In these cases a relative oliguria developed.

The determinations were made also in the cases of thirty-one patients with pathological urinary findings but with renal function that according to the usual tests was normal. In cases of acute and chronic nephritis, early and mild infections and obstructions there was moderate retention after the fourteen hour period.

In a case of compensated heart lesion and in five cases of hypertension with negative urinary findings the results were normal. In hepatic disease with jaundice and ascites and in four cases of pernicious anemia there was moderate retention.

CLAUDE D. PICKRELL, M.D.

Mayr, E. B. Renal Function in Unilateral Disorders of the Kidney. *Brit. M. J.* 1928, 11, 1018.

From a study of about fifty cases Mayr concludes that chemical analysis of the urine is not of much aid in the differential diagnosis of unilateral kidney disorders because various pathological conditions may have similar effects on renal function. However, it seldom fails to show which kidney is affected.

The chief value of chemical analysis of the urine lies not in revealing the presence of calculus or tubercle, but in demonstrating the degree of injury to the kidney cells. The most important problem is to distinguish the reflex diuresis from loss of concentrating power due to inefficiency of the kidney epithelium. The kidney which is taken as a normal control may not be normal. In most cases the blood urea is a safe guide.

THOMAS F. FINEGAN, M.D.

Fey, B. The Results of Twelve Operations for the Painful Syndrome of Hydronephrosis. The Preponderant Role of Abnormal Arteries. (Résultats de douze interventions pour syndrome douloureux d'hydronephrose. Rôle prépondérant des artères anormales.) *Arch. urol. de la clin. de Val de Grâce* 1928, 11, 193.

The twelve operations reviewed were performed for pain indicating intermittent hydronephrosis. The author believes that surgery is justified by this indication alone because a conservative operation is possible only if it is undertaken early.

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1. The degree of dilatation. This is of importance only if it is well advanced as pyeloscopy has demonstrated that minor dilatations may be purely physiological.

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Pyelography is therefore of no value in cases that can be benefited by a conservative operation, but pyeloscopy gives information of importance in early cases. In only one of the author's cases did pyeloscopy prove unreliable. In two cases it revealed a hypertonic pelvis and irregular contractions with a short evacuation time. In three cases the evacuation time was retarded. In six cases there was complete or nearly complete retention. The importance of the interpretation of these findings is emphasized. Papin and the author have expressed the opinion that complete retention signifies a complete and permanent loss of motility, and for cases with complete retention they have advised nephrectomy. However, the author's present attitude is less dogmatic because pyeloscopy has shown that the loss of motility of the renal pelvis may be only temporary. At the time of examination there may be only an inhibition of the pelvic contractions. After a nephrectomy for complete retention the kidney has been observed to contract spontaneously and rhythmically. Chevassu has made the same observation in two cases. On one occasion the author saw contractions appear after section of an abnormal artery and was thereby led to preserve the kidney.

In the treatment of hydronephrosis the first step is exposure and exploration of the kidney. Judging from the literature and the author's own experience (eight of the twelve cases reviewed) an abnormally placed artery is usually found. This has been described as a vascular band, an inferior polar artery, or an abnormal artery. There are also abnormal arteries of the hilum. In one case the ureter was kinked over an ovarian artery.

As the usual mode of approach disturbs the anatomical relations so that any kinks of the ureter may entirely disappear, the author employs an anterior extraperitoneal route (Bazy, Chevassu, Legueu) which allows inspection of the kidney without disturbing it or its pedicle. When the nature of the lesion has been determined the decision between nephrectomy and a conservative operation must be made.

The indications for nephrectomy are loss of the secretory power of the kidney revealed by a thinning of the renal parenchyma and loss of the excretory function. The latter is difficult to judge. As an indication of loss of motility, dilatation of the ureter is of more value than dilatation of the pelvis. The best procedure seems to be direct stimulation to provoke contraction of the pelvis after the constricting



# GENITO-URINARY SURGERY

## ADRENAL KIDNEY AND URETER

Hicks J B. Adenoma of the Adrenal Cortex. *New England J Med* 1928 cxcix 1140

Adenoma of the adrenal cortex is a benign epithelial growth which is quite rare. According to Gibson it is found about once in from 10 000 to 12 000 patients admitted to a general hospital. As a rule it is discovered only at autopsy although in a considerable number of cases it produces symptoms. It may be mistaken for a hypernephroma.

One of the most interesting phenomena associated with adenoma of the adrenal cortex is virilism. The clinical picture of virilism has been recognized since ancient times. Hippocrates described two women with virilism bodies resembling the male and with hair.

All adenomata of the adrenal cortex discovered by clinical examination have occurred in children and women. Symptomless adenomata have been found in males at autopsy.

The tumors range in size from nodules to large masses. In their microscopic structure they vary from an almost exact reproduction of cortical tissue to gland like spaces or alveoli lined with cylindrical or cuboidal cells. As adenomata they do not metastasize but they probably often undergo malignant change.

In explanation of virilism several theories have been advanced. It is generally accepted that there is an internal secretion from the growth which in women tends to diminish the female and increase the male primary and secondary sexual characteristics. According to Krabbe this effect is due to the origin of the tumor from sex glands of masculine type.

The most common signs in females are those of diminished primary and secondary sexual characteristics with a change toward the male: the growth of a beard, the growth of hair on the chest and extremities and male distribution of the pubic hair. The change may be of such a degree as to suggest hermaphroditism. In boys there is premature development of the external genital organs and in adult males impotency. A rare sign is pigmentation of the skin.

The condition is to be suspected when in the case of a patient showing signs of virilism a suprarenal mass is demonstrated by physical examination, cystoscopy, pyelography or surgical exploration. In young persons the symptoms are usually marked but in a large percentage of cases the diagnosis can be made only after microscopical examination of the tumor tissue.

The best treatment so far known is surgical removal of the tumor. In young persons the operative

mortality is high but the benefits of operation are so great that surgery should be tried. Early surgical intervention is advisable also to prevent malignant changes in the benign tumor.

The author reports the case of a woman forty-eight years of age in whom a mass in the left upper quadrant of the abdomen was discovered by two physicians. One physician diagnosed the mass as an enlarged spleen and the other as a tumor of the kidney. Palpation indicated that the mass was an enlarged spleen but the pyelograms and findings at operation suggested that it was a large hypernephroma. The pathological examination alone settled the diagnosis and prognosis. There were no signs of virilism but the skin showed a quite marked generalized yellowish brown pigmentation. The pigmentation disappeared completely soon after removal of the tumor. J EDWIN KIRKPATRICK M.D.

King E S. The Urea Tolerance Test. An Index of Renal Function. *Arch Int Med* 1928 xi: 877

In the author's investigation of the value of the concentration of urea in the blood as an index of renal function, the subject was kept in bed for a period of fourteen hours and during that time was allowed 500 ccm of fluid. For the proper interpretation of the changes in the blood urea it was necessary to maintain the volume of urine within certain limits. No supper was given. The first specimen of urine was rejected but every specimen thereafter was saved. An ovalated specimen of blood was taken. One gram of urea to 10 lbs of body weight was given in sweetened lemonade. Two hours later a second specimen of blood was taken. Fourteen hours after the administration of the urea the last specimen of blood was taken and the quantity of urine was measured.

Sixty-five determinations made in the cases of twenty-seven normal subjects showed a sharp increase in the blood urea between the first and second hours after the ingestion of the urea followed by a gradual return to the control level at the end of the fourteen hours. The maximum concentration was reached after about one hour and was as high as 15 mgm. In the second hour the variations were less marked. The average level was 10.3 mgm. The equilibrium level was reached in the second hour. The rate of urea excretion was greatest when the blood concentration was highest.

It was decided that the second hour reading was of relatively minor importance but that an increase in the urea nitrogen in the blood after the fourteen hour interval was of significance. Variations up to 2 mgm above the central level were considered within normal limits provided the urine output was not over 750 ccm.

In a series of sixteen patients with definitely abnormal urinary findings and definite impairment of renal function the blood urea averaged 15.9 mgm two hours after the ingestion of the urea and there were individual increases to more than 18 mgm. At the end of fourteen hours the average residual was 10.3 mgm. In about half of the cases there was a polyuria of over 750 c cm. The ingestion of the urea did not influence the clinical condition or cause discomfort. In two cases of uræmia the blood urea continued to rise during the fourteen hour period an observation demonstrating that the kidneys were unable to eliminate not only the urea given but also the urea produced by catabolism of the tissues. In these cases a relative oliguria developed.

The determinations were made also in the cases of thirty-one patients with pathological urinary findings but with renal function that according to the usual tests was normal. In cases of acute and chronic nephritis, early and mild infections and obstructions there was moderate retention after the fourteen hour period.

In a case of compensated heart lesion and in five cases of hypertension with negative urinary findings the results were normal. In hepatic disease with jaundice and ascites and in four cases of pernicious anemia there was moderate retention.

CLAUDE D. PICARELL, M.D.

Mayrs E. B. Renal Function in Unilateral Disorders of the Kidney. *Brit. M. J.* 1928 II 1028.

From a study of about fifty cases Mayrs concludes that chemical analysis of the urine is not of much aid in the differential diagnosis of unilateral kidney disorders because various pathological conditions may have similar effects on renal function. However it seldom fails to show which kidney is affected.

The chief value of chemical analysis of the urine lies not in revealing the presence of calculus or tubercle but in demonstrating the degree of injury to the kidney cells. The most important problem is to distinguish the reflex diuresis from loss of concentrating power due to inefficiency of the kidney epithelium. The kidney which is taken as a normal control may not be normal. In most cases the blood urea is a safe guide.

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The indications for nephrectomy are loss of the secretory power of the kidney revealed by a thinning of the renal parenchyma and loss of the excretory function. The latter is difficult to judge. As an indication of loss of motility dilatation of the ureter is of more value than dilatation of the pelvis. The best procedure seems to be direct stimulation to provoke contraction of the pelvis after the constricting

band has been severed. If contraction occurs conservative treatment seems justifiable.

**Nephropexy** is the operation of choice when there is ptosis of the kidney. This was employed only once in the cases reviewed. The author is opposed to its routine use.

Section of the artery which is embarrassing the pelvic function suffices to cure the retention (cure in all of seven cases). Complementary operations (nephropexy plastic operations) are superfluous. Theoretically there is danger of causing an infarct by sectioning an artery but practically no accidents are observed. Because of the technical difficulties and the uncertainty of the results the author has never employed any of the plastic operations on the pelvis or ureter.

A complete cure was obtained in nine of the twelve cases reviewed. In eight of the cured cases an artery was the cause of the symptoms. In one of two cases of rotation of the kidney a partial cure was obtained and in the other the treatment failed. In one case no lesion was found. Infection was present in two cases. In one of these there was a veritable pyonephrosis. The fact that both patients with infection were cured confirms the author's opinion that persistence of infection is directly related to loss of motility of the excretory passages. Pyeloscopy shows that motility is recovered in all cases after operation. Curiously the notch produced by the artery often persists.

With regard to the pathogenesis of the hydro-nephrosis the author concludes that the action of an abnormal artery is not mechanical but reflex. Except for the presence of such an artery there is no congenital cause of hydronephrosis.

The causes of pain are due to spasms of the musculature of the pelvis and ureter occurring between intervals of inactivity.

The author's twelve cases are reported in detail with roentgenograms and anatomical diagrams.

ALBERT F. DE GROOT, M.D.

**Legueu Fey and Cordan: Disturbances in the Evacuation of the Kidney Pelvis and the Recurrence of Calculi (Les troubles d'évacuation du bassin et la récurrence des calculs).** *Arch. urol. de la clin. de Necker* 1928 vi 175.

There being no way of predicting whether or not calculi will recur after pyelotomy or oephrotomy the indications for nephrectomy have been gradually extended in recent years. To discover the factors which influence the prognosis in nephrolithiasis the authors have re-examined seventeen patients whom they operated upon for this condition.

In ten of the seventeen cases a pyelotomy was done in five a nephrotomy and in two a ureterotomy. The calculi recurred in five cases (27 per cent). Three of the recurrences followed pyelotomy and two followed nephrotomy. The diagnosis of recurrence was made with the X-ray. Four of the five recurrent calculi were silent.

Of the conditions that predispose to recurrence infection comes first. Infection was present in

fifteen of the seventeen cases. Both of the two patients without sepsis remained well. Of the seven with infection who had clear urine soon after the operation all remained without recurrence. Of the eight who remained infected after operation five suffered a recurrence.

While the rôle of infection is certain the conditions that cause persistence of infection require investigation.

After every operation efforts should be made to sterilize the urinary tract. In a number of cases the urine clears rapidly even without treatment but in others which are clinically identical the infection persists regardless of any and all therapy. The authors have seen calculi develop while the patient was receiving weekly irrigations for a colon bacillus pyelitis. In studies of the relation of imperfect evacuation of the renal pelvis to the persistence of infection it was found that the infection and retention paralleled each other.

Of the authors' nine patients who were free from recurrence and had clear urine only one showed any degree of retention in the renal pelvis. The three whose urine remained infected showed retarded evacuation of the renal pelvis. Therefore the ultimate cause of recurrent calculi appears to be retention which acts by maintaining infection.

In pyeloscopic studies calculi have been found to cause a degree of retention that seems to be entirely reflex. Continued retention after operation is ascribed to a functional disturbance of the musculature of the pelvis. If a calculus is removed promptly the normal motility of the pelvis is promptly recovered; any infection that may be present is overcome and the patient remains well but if sclerosis of the kidney pelvis has taken place the tonicity of the pelvis is lost, retention and infection persist and recurrence of the calculus is inevitable. These facts may be utilized in establishing the prognosis and the absence or presence of a good pelvic motility will enable the surgeon to choose wisely between nephrectomy and a conservative operation.

ALBERT F. DE GROOT, M.D.

**Kretschmer H. L. and Randolph H. S.: Spindle-Celled Sarcoma of the Kidney in Adults.** *Ann. Surg.* 1928 lxxviii 1033.

The authors state that in children spindle-celled tumors are the most common types of renal neoplasms but in adults they are rare and spindle-celled sarcoma is very rare. They report the case of a man fifty-five years of age who complained of hemorrhoids, pain and swelling of the left testis and the left lower quadrant of the abdomen of six weeks duration, epigastric distress which occurred immediately after meals and was frequently relieved by vomiting, a loss of weight for a period of two months, slight frequency of urination, nocturnal fever and sweating of five weeks duration and a painful varicocele which had been present for several months. The abdominal pain was of a mild dragging character and was noted especially after walking.

The swelling and pain in the testicle had become progressively more marked and constant and radiated to the perineum and anus.

Examination revealed a hard mass in the left flank which extended up to the ribs across the mid line and down to a point just below the left anterior superior spine of the ilium and moved slightly with respiration. A mass was palpable also just above the umbilicus. Slight tenderness was present in the right flank but none was noted on fist percussion posteriorly. The urine contained blood and pus. Examination of the stools revealed a strong benzidine reaction. Fluoroscopic showed the stomach to be displaced to the right. In the urine from the left kidney the urea was markedly diminished and the phtalein test was not readable. The pyelogram of the right kidney was normal but that of the left kidney showed a complete block of the renal pelvis. A diagnosis of tumor of the left kidney probably hypernephroma was made.

Operation revealed a large tumor mass firmly adherent to the surrounding structures. Removal of the left kidney disclosed large tumor masses both above and below the area from which the kidney had been removed (lymph gland involvement).

The patient recovered from the operation and remained in good condition for several months but died from an extensive local recurrence. Permission for autopsy was not obtained. The pathological diagnosis was spindle-celled sarcoma.

Spindle-celled sarcoma of the kidney has been confused with hypernephroma but is most difficult to differentiate from retroperitoneal sarcoma. The case reported in this article is an excellent example of the latter difficulty as the tumor had almost completely replaced the kidney. The point of origin of the sarcoma is difficult to establish.

Hematuria is frequently absent when the tumor develops from the capsule but is generally present when the tumor is of stromal and epithelial origin. Varicoele and hemorrhoids are the most troublesome complications. Varices may be found in the bladder. In cases of kidney tumor symptomatic varicoele is of special significance. Loss of weight is common. A pre operative diagnosis of sarcoma of the kidney as differentiated from other types of kidney tumor is practically impossible.

LOUIS NEUWELT M D

Henline R B. A New Method of Paravertebral Anesthesia for Kidney Operations. Report of Thirty Three Cases. *J Urol* 1929 xii, 27

Jeck H S. Nephrectomy under Spinal Anesthesia with Particular Reference to Nephrectomy in Renal Tuberculosis. *J Urol* 1929 xii, 61

Ockerblad N F and Dillon T G. Ephedrine—Controlled Spinal Anesthesia. *J Urol* 1929 xii, 77

HENLINE calls attention to the fact that in renal operations the margin of safety is less than in most surgical procedures because one of the organs of

elimination is either removed or considerably embarrassed. It is still further reduced by the use of general anesthesia. With paravertebral anesthesia it is possible to operate in cases in which the function of the kidneys is so defective as to render the risk of general anesthesia very great. Regional anesthesia causes fewer deaths than inhalation anesthesia.

In the author's method of inducing paravertebral anesthesia the posterior roots of the spinal nerves are injected with a solution of procain at or near their point of exit from the vertebral column. Only the nerves which supply the operative field are injected. It is rarely necessary to use more than 15 gm of procain. A 1 per cent solution of procain causes no vasodilatation or vasoconstriction and as procain is destroyed very rapidly in the liver and has no after-effects it is a very safe anesthetic provided sufficient time is taken for its administration.

The use of adrenalin for regional anesthesia has been discontinued by Henline because it is not free from danger it increases the toxicity and anesthesia of sufficiently long duration can be induced without it.

The needle used for the induction of regional anesthesia should be flexible but should not bend and should be long enough so that it will not be entirely buried in the tissues when the deepest injection is made.

Before the regional injections are begun Henline gives three hypodermic injections of  $\frac{3}{8}$  gr of morphine sulphate in 2 cc of a 50 per cent solution of magnesium sulphate with procain after the method of Gwathmey. These injections are given at half hour intervals.

For the paravertebral anesthesia a 1 per cent solution of procain without adrenalin is used. This solution is injected both above and below the transverse processes of the eighth dorsal to the second lumbar vertebrae inclusive. Five cubic centimeters are injected above and below each nerve except in the case of the two lumbar nerves for which 10 cc are used. Complete anesthetization of the ilioinguinal and iliohypogastric nerves is of great importance in renal surgery. Two nerves are injected through one skin puncture.

Henline uses also the posterior method of splanchnic analgesia devised by Kappis. He employs this method for manipulations of the kidney. In addition the line of the incision is infiltrated subcutaneously with the 1 per cent procain solution.

If weakening of the pulse is noted during the administration of the procain which is not unusual the induction of the anesthesia is stopped and a hypodermic injection of 10 m of a 1:1000 solution of adrenalin or from 5 to 10 gr of a solution of caffeine sodium benzoate are given immediately. These measures have always proved sufficient to restore the quality of the pulse to normal within a short time.

Fluids are given before during and immediately after the operation. The administration of fluids is

very important in renal surgery as it prevents temporary dehydration with disturbance of kidney function

By the combined anaesthesia described Henline obtained successful results in 50.6 per cent of eighty-one cases. In forty-four cases additional anaesthesia was required. For operations lasting an average of forty-two and two tenths minutes an average of 120.6 c.c. of 1 per cent procain was used.

JECK believes that spinal anaesthesia is better for nephrectomy than any other form of regional anaesthesia. It necessitates less experience on the part of the anaesthetist, it requires much less time and much less manipulation and therefore spares the nervous system of the highly neurotic patient and it is satisfactory in a higher percentage of cases than other forms of regional anaesthesia. In renal tuberculosis it is better than general anaesthesia for nephrectomy because it spares the lungs, it has no apparent effect on the kidneys, it is associated with less danger of dissemination of the toxic material as it usually requires much less handling of the kidney and it is seldom if ever followed by the very distressing type of ileus which so frequently follows kidney operations performed under general anaesthesia.

In twenty-one cases JECK used either novocain Pitkin's solution (200 mgm. dose of novocain) or neocain. The site of injection was the space between the twelfth dorsal and first lumbar vertebrae or that between the first and second lumbar vertebrae. In some of the cases JECK used ephedrine to prevent the marked drop in the blood pressure which almost always follows the intraspinal injection of novocain. He obtained better results with Pitkin's solution than with novocain alone. Not much attention was paid to the blood pressure unless vomiting, sudden pallor or an increase in the respiratory movements occurred. When such signs developed ephedrine or adrenalin was used and the patient placed in the Trendelenburg position.

OCKERBLAN and DRITOV report on the use of ephedrine in 250 cases of spinal anaesthesia. They state that in patients subjected to spinal anaesthesia a circulatory collapse occurs which varies in degree according to the patient's age, the stability of the circulation, the blood pressure, the amount of procain introduced into the subdural space, the length and severity of the operation and the patient's nervous and general physical condition. There can be no doubt that this is due to paralysis of the splanchnic nerves which is produced by the procain and is followed by dilatation of the splanchnic vessels causing them to act as a reservoir for nearly all of the blood in the body. It was to combat this condition that the authors began the routine use of ephedrine. The pharmacological action of adrenalin and ephedrine is somewhat the same, but ephedrine produces a sustained increase in the blood pressure both systolic and diastolic.

In cases of hypotension the authors give ephedrine long enough before the administration of the procain

to raise the blood pressure from 20 to 30 mm. above normal for the patient. As soon as a tendency toward a fall in the blood pressure is noted during the spinal anaesthesia 0.05 gm. of ephedrine is given at intervals of from three to five minutes until the pressure rises. When the summit of the rise is reached the tendency toward a fall is combated in the same manner.

JACOB S. GROVE, M.D.

SERRA, G. Uretero-venous Anastomosis and Its Effects Particularly with Reference to the Production of Uraemia (*L'anastomosi uretero-venosa e le sue conseguenze specialmente in rapporto con la genesi dell'uremia*) (*Arch. ital. di chir.* 1928, xxi, 137).

In experiments on dogs in which SERRA established a unilateral anastomosis between the ureter and the iliac vein, he found that in a certain percentage of the animals the opening remained permeable for a considerable length of time but in others was promptly occluded by a thrombus. In the latter his findings agree with those of BRUECKE. In the animals with occlusion the late effects were those of hydro-nephrosis. In those in which the opening remained permeable SERRA did not see the rapidly fatal uraemic symptoms described by BRUECKE. Instead he found inflammatory and degenerative changes in the liver and kidneys and progressive general depression with a moderate increase in the amount of urea in the blood. However the behavior of the xanthoprotein reaction was by no means constant. These findings show that contrary to the opinion of BRUECKE and others a direct flow of urine into the blood can be borne for some days (as long as ten days in the author's experiments).

The symptoms and pathological lesions are explained by changes in the blood and the establishment of a vicious circle as a result of the disturbance of the excretory function. The findings do not justify the assumption that there is a nephrogenic toxin. When the renal and hepatic lesions have been once produced by the disturbance of exchange between the blood and urine the products of disintegration of the parenchymatous cells contribute still further to the damage by their toxicity.

Histological examination of the anastomosis showed changes in the structure of the wall of the vein: the venous endothelium was destroyed and in some instances there was proliferation of the ureteral endothelium on the inner surface of the vein with destruction of muscle cells and signs of inflammatory infiltration in the media and adventitia. The thrombus was usually organized and had a canal through it. Sometimes it developed in successive layers.

ANDREW G. MORGAN, M.D.

TRATTNER, H. R. Ureteral Activity in Some Pathological Conditions Studied by the Graphic Manometric Method (*J. ch. Surg.* 1928, xxi, 908).

The author describes a sensitive instrument for the graphic manometric study of ureteral peristalsis by means of which ureteral activity may be recorded

without obstructing the escape of urine. The method is adaptable to the intact unexposed human ureter as well as to the exposed or excised animal ureter and causes minimal inconvenience to the patient and operator.

The outflow of urine is controlled by a needle valve adjustment in order to establish the degree of peripheral resistance at which contractions are best maintained and to simulate intravesical pressures. The upper lower and middle portion of the ureter may be examined separately by placing the end of the catheter at the desired level. In clinical cases the activity of the ureter of one side is usually compared with that of the other by using one manometer alternately. However simultaneous records of both ureters have been made with two manometers and in bilateral ureteral duplication with four.

The ureter seems to possess two chief types of waves namely the small rapid pendulum movements that are not concerned with the propulsion of urine and the slower more powerful peristaltic contractions that are usually accompanied by an outflow of urine. These waves vary in configuration. There are tonus variations tonic and spastic contractions and changes of rhythm. The waves may be (1) complete i.e. pass along the entire length of the ureter (2) incomplete i.e. arise in the renal pelvis but disappear before reaching the bladder or (3) local i.e. confined to a small segment of the ureter.

The problem of effective ureteral drainage is not necessarily one of mechanical ureteral obstruction. Ureteral obstruction may be of the dynamic variety in which there are hypertonus spasm etc. or of the adynamic type in which there is hypotonus atony atrophy or paralysis. Under such conditions normal renal physiological activity is impaired by the loss of a functionally competent ureter. Incompetency of the ureteral musculature will account for the unilateral dilatation sometimes seen when the obstruction is distal to the ureter and for the resistance to treatment in many cases of ureteropyelitis.

A test of ureteral competency is made when spontaneous peristaltic activity seems to be absent since under such conditions the ureter may be either merely quiescent or incapable of contracting. The test is made by injecting fluid into the ureter. If the ureter is capable of contracting energetic attempts at expulsion are elicited. The motor response varies according to the degree of ureteral involvement and is designated as strong moderate feeble or absent.

The rôle of congestion of the female ureter in simple ureteritis is discussed. Whether the increased blood flow to the lower female ureter causes a mechanical impediment to urinary drainage through congestion or oedema or the increased vascularity is in itself sufficient to modify ureteral peristalsis to such a degree as to give rise to a dynamic type of obstruction by reason of the hypertonic state of the ureter is not definitely known.

The manometric tracings allow classification of ureteritis into the three following varieties according to the degree of ureteral activity.

1 First degree ureteritis hyperactivity hypertonus. Cases in this division are those in which an irritative early toxic or inflammatory process is present. There is usually acute colicky pain and vaginal examination reveals tenderness along one or both ureters. The manometric tracing shows a marked increase in the amplitude and rate of the peristaltic waves or prolonged tonic (spastic) contractions. There is a strong motor response to the intra ureteral injection of fluid the patient complaining of severe pain when only a small quantity such as from 2 to 5 c.c. is gently injected. In ureters in this class normal activity may be regained or the condition may progress to the second degree.

2 Second degree ureteritis hypotonus atonia. Cases in this division are those in which ureteral activity is being or has been interrupted by toxic factors inflammatory infiltration or thinning of the muscular coats by dilatation. The pain is more constant and dull. On vaginal examination one or both ureters are palpable and tender to pressure. The manometric tracing shows either a marked decrease in the amplitude or total abolition of the peristaltic contractions. There is either a feeble or no motor response to the intra ureteral injection of fluid. In ureters in this class activity may be regained or the condition may progress to permanent paralysis.

3 Third degree ureteritis paralysis. Cases in this division are those in which peristaltic ureteral activity has been permanently abolished because of extensive inflammatory infiltration (fibrosis) or because of thinning of the muscular coats by marked dilatation (atrophy). On vaginal examination the ureter is usually found to be thickened and may or may not be tender to pressure. The manometric tracing shows complete absence of peristaltic activity and there is no response to the intra ureteral injection of fluid. This type of ureteritis is usually secondary to tuberculosis calculous disease diffuse fibrosis etc.

Manometric tracings have been made in the following conditions (1) normal (2) hydro ureter and hydronephrosis (3) lithiasis (4) after uretero lithotomy or after the spontaneous passage of a ureteral stone (5) cord bladder (6) bilateral complete duplication of the ureters (simultaneous records of all ureters) and (7) ureteritis of various degrees tuberculous and non tuberculous.

In some cases the manometric tracings representing the condition of the ureter have been confirmed by the gross and microscopic examinations of the specimen and in others by roentgenograms made following the injection of an opaque solution.

The author draws the following conclusions.

1 Relief of symptoms in patients who have ureteritis or ureteropyelitis appears to occur simultaneously with the recovery of ureteral activity but aggravation of the disease seems to be concomitant either with ureteral hyperactivity or with the loss of peristaltic contractile ability.

2 Mechanical ureteral obstruction cannot be dissociated from functional ureteral impairment but

very important in renal surgery as it prevents temporary dehydration with disturbance of kidney function

By the combined anaesthesia described Henline obtained successful results in 50.6 per cent of eighty-one cases. In forty-four cases additional anaesthesia was required. For operations lasting an average of forty-two and two-tenths minutes, an average of 120.6 c.c. of 1 per cent procain was used.

JECK believes that spinal anaesthesia is better for nephrectomy than any other form of regional anaesthesia. It necessitates less experience on the part of the anaesthetist, it requires much less time and much less manipulation and therefore spares the nervous system of the highly neurotic patient and it is satisfactory in a higher percentage of cases than other forms of regional anaesthesia. In renal tuberculosis it is better than general anaesthesia for nephrectomy because it spares the lungs, it has no apparent effect on the kidneys, it is associated with less danger of dissemination of the toxic material as it usually requires much less handling of the kidney and it is seldom if ever followed by the very distressing type of ileus which so frequently follows kidney operations performed under general anaesthesia.

In twenty-one cases JECK used either novocain Pitkin's solution (200 mgm. dose of novocain) or neocain. The site of injection was the space between the twelfth dorsal and first lumbar vertebrae or that between the first and second lumbar vertebrae. In some of the cases JECK used ephedrine to prevent the marked drop in the blood pressure which almost always follows the intraspinal injection of novocain. He obtained better results with Pitkin's solution than with novocain alone. Not much attention was paid to the blood pressure unless vomiting, sudden pallor, or an increase in the respiratory movements occurred. When such signs developed ephedrine or adrenalin was used and the patient placed in the Trendelenburg position.

OCKERBLAD and DILLOY report on the use of ephedrine in 150 cases of spinal anaesthesia. They state that in patients subjected to spinal anaesthesia a circulatory collapse occurs which varies in degree according to the patient's age, the stability of the circulation, the blood pressure, the amount of procain introduced into the subdural space, the length and severity of the operation and the patient's nervous and general physical condition. There can be no doubt that this is due to paralysis of the splanchnic nerves which is produced by the procain and is followed by dilatation of the splanchnic vessels causing them to act as a reservoir for nearly all of the blood in the body. It was to combat this condition that the authors began the routine use of ephedrine. The pharmacological action of adrenalin and ephedrine is somewhat the same, but ephedrine produces a sustained increase in the blood pressure, both systolic and diastolic.

In cases of hypotension the authors give ephedrine long enough before the administration of the procain

to raise the blood pressure from 20 to 30 mm. above normal for the patient. As soon as a tendency toward a fall in the blood pressure is noted during the spinal anaesthesia 0.05 gm. of ephedrine is given at intervals of from three to five minutes until the pressure rises. When the summit of the rise is reached the tendency toward a fall is combated in the same manner.

JACOB S. GROVE, M.D.

**Serra G. Ureterovenous Anastomosis and Its Effects. Particularly with Reference to the Production of Uremia.** (L'ana (tomo 1) uretero-venosa e le sue conseguenze specialmente in rapporto con la genesi dell'uremia) *Arch. t. l. d. ch.* 1928, xvii, 137.

In experiments on dogs in which Serra established a unilateral anastomosis between the ureter and the iliac vein, he found that in a certain percentage of the animals the opening remained permeable for a considerable length of time, but in others was promptly occluded by a thrombus. In the latter his findings agree with those of Bruecke. In the animals with occlusion the late effects were those of hydro-nephrosis. In those in which the opening remained permeable Serra did not see the rapidly fatal uraemic symptoms described by Bruecke. Instead he found inflammatory and degenerative changes in the liver and kidneys and progressive general depression with a moderate increase in the amount of urea in the blood. However, the behavior of the xanthoprotein reaction was by no means constant. These findings show that, contrary to the opinion of Bruecke and others, a direct flow of urine into the blood can be borne for some days (as long as ten days in the author's experiments).

The symptoms and pathological lesions are explained by changes in the blood and the establishment of a vicious circle as a result of the disturbance of the excretory function. The findings do not justify the assumption that there is a nephrogenic toxin. When the renal and hepatic lesions have been once produced by the disturbance of exchange between the blood and urine, the products of disintegration of the parenchymatous cells contribute still further to the damage by their toxicity.

Histological examination of the anastomosis showed changes in the structure of the wall of the vein, the venous endothelium was destroyed and in some instances there was proliferation of the ureteral endothelium on the inner surface of the vein with destruction of muscle cells and signs of inflammatory infiltration in the media and adventitia. The thrombus was usually organized and had a canal through it. Sometimes it developed in successive layers.

ANDREW G. MORGAN, M.D.

**Trattner H. R. Ureteral Activity in Some Pathological Conditions. Studied by the Graphic Manometric Method.** *Arch. Surg.* 1928, xvi, 968.

The author describes a sensitive instrument for the graphic manometric study of ureteral peristalsis by means of which ureteral activity may be recorded

The group of signs cited is not always complete. There may be only a projection of the posterior border of the neck or again only a lengthening of the urethra. The projection of the lateral lobe with effacement of the corresponding groove may occur only on one side. These mechanical changes were found in 27 of the 200 cases studied.

The presence of inflammation of the glandular orifices is a valuable sign. These may constitute true cavities and should be looked for in the lateral grooves and in the fossa immediately above the verumontanum. They were found in 36 of the cases.

The signs described are rarely found alone. There are usually changes in the mucosa of the posterior urethra. These are classified by the author as (1) chronic posterior urethritis with colliculitis, (2) posterior urethritis without colliculitis, and (3) colliculitis without involvement of the urethra elsewhere.

Changes of the first type were present in 168 of the cases studied. The inflammation was nearly always limited to the posterior urethra. When the anterior urethra was involved the inflammation there was much less intense.

The pathological changes observed in the mucosa of the posterior urethra are:

1. Simple congestion—an increase in the size and number of the submucous vessels with or without ecchymosis.

2. Diffuse oedema. The mucosa is uniformly red but distinct vessels are not visible.

3. Organized oedema characterized by the development of very vascular globular vesicles implanted on a broad base.

4. Irregular fleshy vegetations which bleed at the slightest touch.

5. Small circumscribed intensely red granulations and ulcerations. These two lesions are quite rare. The ulcerations are difficult to discover because of the exudate that is always present.

6. A cicatricial aspect of the deep urethra. This is still more rare.

The same classification may be applied to the lesions of the verumontanum.

Isolated lesions of the verumontanum are uncommon. The author questions the theory that the state of the verumontanum reflects the state of the seminal vesicles. In the cases reviewed no such relationship was noted.

Only 13 of the 200 patients were free from lesions of the posterior urethra.

After describing and classifying the endoscopic findings the author discusses the treatment. The treatment must be directed to both the glandular infection and the posterior urethritis. For the prostatitis proper the standard treatment is found to be eminently satisfactory but may be supplemented to advantage by the use of stock or autogenous vaccines, the application of the high frequency current by way of the rectum (technique of Morgenstern and Marcel) and radium irradiation.

The treatment of the posterior urethritis varies with the lesion. In simple congestion urethrovessical irrigations with argyrol or mercuric cyanide and instillations of 0.5 per cent silver nitrate are beneficial. In diffuse oedema the use of the monopolar current applied with a glass urethral electrode and irrigations are indicated. In organized lesions the high frequency bipolar current should be applied through the urethroscope.

To avoid accidents due to infection the urethroscopic applications should be preceded by a long preliminary treatment by irrigations etc. For the urethroscopic treatment the patient should be hospitalized.

The results of treatment rigorously applied are uniformly good. Of 31 patients presenting advanced lesions all were treated successfully.

ALBERT F. DE GROAT, M.D.



there may be loss of function in the absence of mechanical interference

3 Manometric tracings are of aid in the detection of early as well as late disturbances of ureteral function in the diagnosis of dilated ureter and pelvis with or without opaque studies in the decision as to which ureter should be injected with an opaque solution when there appears to be no difference between the two sides and in the determination of involvement of the ureter by tuberculosis calculous disease tumor etc

The types of ureteritis are fully elaborated with case histories which are illustrated by manometric tracings roentgenograms and operative specimens

J EDWIN KIRKPATRICK M D

### BLADDER URETHRA AND PENIS

Hunt V C Malignant Disease in Diverticula of the Bladder *J Urol* 1939 xxi 1

While primary malignant disease of the bladder associated with a bladder diverticulum and with or without secondary involvement of the diverticulum is not common it occurs more frequently than primary malignancy in a diverticulum without involvement of the bladder

Hunt cites eight cases of primary malignant disease confined to a diverticulum of the bladder which have been reported in the literature four cases in which he operated himself and one case which was operated upon by Judd

Diagnostic features in the cystogram are the projection of tumor tissue through the orifice of the diverticulum into the bladder and a filling defect in the diverticulum

The surgical removal of a diverticulum with malignancy is the same as that of a diverticulum uncomplicated by malignancy Extravesical extirpation is suggested as a means of completely removing the growth with minimal risk of transplanting malignant tissue In the absence of extravesical extension the results of extirpation of the diverticulum so far as cure is concerned should be better than those of removal of primary malignant disease of the bladder

The specimens from the cases reported by the author were found to be squamous celled epithelioma of a high grade of malignancy according to Broder's classification and similar to squamous-celled epithelioma primary in the bladder

Moorhead S W Keeping the Patient Dry After Vesical Operations *Pc nyslania M J* 1928 xxxii 155

To keep the patient dry after a vesical operation it is necessary to suture the bladder carefully about the drainage tube inserted at the time of the operation The best drain is  $\frac{3}{4}$  in tubing moulded by being boiled on a form The tubing should be firmly strapped close to the abdomen over a few layers of gauze and tightly joined to a piece of  $\frac{3}{4}$  in tubing leading to a bottle at the side of the bed

After removal of the initial tube the collection of urine is more difficult Attempts to absorb the urine by means of large gauze dressings are rarely successful At this time three methods are applicable suction drainage by the open method the application of a gutta percha or rubber-dam dressing and the use of one of the various types of drainage box or cup

For suction drainage some mechanical apparatus to suck air must be available The author has obtained satisfactory results with the Sprengel pump a pump driven by a small electrical motor and an intermittent water syphon pump of the Dawborn type

The gutta percha or rubber-dam dressing consists of gauze and cotton surrounded by gutta percha or a rubber dam except at the operative wound To make a water tight joint between the skin and the tissue the wound is surrounded by adhesive cement

Among the collecting devices that have proved satisfactory are those advocated by Thomas Irving and Muschat

THOMAS F FENIGAN M D

### GENITAL ORGANS

Flandrin P Posterior Urethroscopy in the Diagnosis and Treatment of Chronic Prostatitis (*De l'uréthroscopie postérieure dans le diagnostic et le traitement des prostatites chroniques*) *Arch urol de la clin de Necker* 1928 vi 165

This report is based on a study of 200 cases of chronic prostatitis Most of the examinations were made with the MacCarthy cysto urethroscope and a few with the instrument of Heitz Boyer and that of the author

The use of urethroscopy in prostatitis on a large scale has made possible the isolation of a certain number of cystoscopic signs which are characteristic of the lesion These signs consist of deformities of the prostate resulting from the infection and constitute a mechanical syndrome They are

1 An increase in the length of the prostatic urethra to which both the segment above and below the verumontanum contribute

2 An abnormal projection of the posterior border of the bladder neck which to a greater or lesser degree obscures the trigone and the ureteral orifices

3 Effacement of the lateral grooves of the prostatic urethra

4 Intra urethral projection of the lateral lobes which is more or less prominent and nearly always irregular in contour

The two lateral projections are usually of small size and are easily distinguishable from the deformity produced by an adenoma In the differentiation of the two conditions the patient's age and the results of the rectal examination must be considered but it should be borne in mind that in chronic prostatitis the lengthening of the urethra occurs both below and above the verumontanum whereas in cases of adenoma only the upper segment of the prostatic urethra is affected

best done after the twelfth year of age. Lateral deformity is prevented by fixation of the subastragaloid joints and balance is restored by backward displacement of the foot.

Arthrodesis of the shoulder may be done in cases with strong scapular muscles and paralysis of the deltoid and other shoulder muscles. When the shoulder is arthrodesed in from 50 to 60 degrees of abduction and from 10 to 15 degrees forward from the sagittal plane the substitution of the scapular movement provides good function.

In paralysis of the back muscles with increasing deformity fusion of the spine is indicated.

WILLIAM A. CLARK M.D.

Juengling O. Osteitis Tuberculosa Multiplex Cystoides. Also a Contribution on Tuberculids of Bone (Leber Ostitis tuberculo multiplex cystoid; zugleich ein Beitrag zur Lehre von den Tuberkuliden des Knochens). *Beitr. klin. Chir.* 19 8 xliii 401.

Juengling presents a detailed description of osteitis tuberculosa multiplex cystoides reviews forty six cases reported in the literature and reports in detail nine cases of his own.

The disease is often associated with two skin diseases lupus pernio and the sarcoid of Boeck which are similar to each other both clinically and histologically. In the former bone changes are common but in the latter they are less frequent. The bone disease may develop also without skin changes or may affect the skin secondarily. Hygromata in the tendon sheaths and bursae are common associated lesions.

Osteitis tuberculosa multiplex cystoides occurs most frequently in the basal and middle phalanges of the fingers and toes the metacarpals terminal phalanges and metatarsals and the root of the nose. Only occasionally does it affect the long bones.

It begins in youth, puberty seeming to establish a predisposition to it. It usually develops with inflammatory swelling and rheumatoid pains and spreads by attacks. In the affected thickened parts of the limbs the dorsal veins are prominent and the skin becomes bluish red. On further progress of the condition granulations may rupture through the skin. There is no suppuration and the mobility of adjacent joints is not disturbed. In some cases superficial efflorescences from the skin are present from the beginning. Frequently the patient is very sensitive to cold. Occasionally there are trophic changes in the nails from the disturbance of the circulation. In very severe cases mutilation results.

The roentgenogram reveals rarefaction of the bone beginning in the marrow. The bone shows a honeycomb structure with spotty lighter areas like punched out holes which are diffuse or localized in circumscribed areas and are particularly numerous in the heads of the phalanges.

The diffuse type represents a florid initial stage and the circumscribed type a healing form of the condition. Between these there are transition types.

In a third type with a slow course the roentgenogram shows diffuse finely spotted light areas a delicate lattice structure of the bone. In the author's opinion marked destruction occurs in the diffuse form with large spots.

Sclerosis is of relatively little importance and as a rule there is no periosteal irritation although slight bony swellings are observed. Sequestrum formation and disturbances of growth do not occur. Rupture into a joint is very rare but arthritic irregularities may form when the condition is of long standing.

With regard to the pathological anatomy and the etiology of the disease the author states that under certain conditions the body reacts to the virus of tuberculosis in a typical special form the chief characteristics of which are a negative tuberculin reaction and the formation of tuberculous nodules from epithelioid cells and fibroblasts with a few marginal lymphocytes with or without Langhans giant cells but always without caseation. This type of reaction is most common in the skin (lupus pernio and Boeck's sarcoid) but may affect also the deeper layers of the connective tissue the bursae the tendon sheaths and in the typical form the bones especially the metacarpals metatarsals and phalanges in the form of central bone foci which cause more or less destruction of the bone without producing any signs of periosteal irritation. In the roentgenogram the bone foci appear like cysts and are always multiple. The disease may develop in the same typical reaction form also in the internal organs in association with ordinary tuberculosis.

The condition must be differentiated from spinavertosa osteitis fibrosa lues lepra tuberosa and enchondromata. Particularly lues in the tabetic and paralytic stages and lepra tuberosa may present very similar roentgen findings. When the diagnosis is difficult the efflorescences of the skin may be of great aid.

The course of the disease is usually chronic. The bone changes have only a very slight tendency to heal.

It has not been determined whether any therapeutic measure will be effective in this condition. In a few cases treated by roentgen irradiation the skin foci have receded markedly but the bone foci have remained uninfuenced.

KOENIG (Z)

Albee F. H. The Principles of the Bacteriophage Applied to Osteomyelitis. *Internal J. Med. & Surg.* 1929 xlii 1.

Albee discusses the Orr method of treating osteomyelitis and reports several cases in which it was used. He believes that when the tissues are bathed by exuding pus retained *in situ* by a plaster of Paris bandage an immunizing reaction is produced at the site of infection. D'Herelle calls the transmissible lytic principle a bacteriophage and believes that it brings about changes which increase phagocytosis.

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# SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

## CONDITIONS OF THE BONES JOINTS MUSCLES TENDONS ETC

Diveley R L. *Anterior Poliomyelitis A Study of the Acute Stage with Special Reference to the Early Diagnosis and Treatment* J Bone & Joint Surg 1929 11: 200

Of 185 cases of anterior poliomyelitis which occurred in the epidemic of 1923 77 per cent developed during the months of July August and September. Eighty of the patients were under four years of age seventy one were between the ages of four and fifteen years and thirty four were over fifteen years of age. There were thirty eight deaths a mortality of 20 per cent.

In the upper extremities the paralysis was first noted in the proximal groups of muscles and extended distally and recovery occurred in the opposite direction. The deltoid was the muscle most often affected and least likely to show regeneration to normal. In the lower extremities the paralysis began in the distal groups of muscles and extended proximally recovery occurred in the opposite direction and the muscle most frequently affected was the tibialis anticus.

In only 12 of the cases was a spinal puncture made for diagnosis or treatment. It is noteworthy that when spinal drainage was done and repeated to keep the intraspinal pressure down the acute symptoms often disappeared immediately the paralysis was light and recovery was rapid.

None of the patients was given human convalescent serum or the immunized horse serum of Rosenow. In a very large percentage of the cases the diagnosis of poliomyelitis was not made until after the development of paralysis.

Of 14 cases studied by the author during the epidemic of 1923 4 were treated medically and 10 with serum and spinal drainage. In the cases in which Rosenow's serum was used recovery was more rapid and the paralysis less marked and extensive than in the untreated cases. The effect of spinal drainage on the acute symptoms was almost phenomenal the symptoms disappearing for the most part very soon after the drainage and recurring only when the spinal pressure was again raised above the normal. The death rate was much smaller in the treated series.

In experimental studies on monkeys it was found that the animals could be immunized against an active virus of poliomyelitis by human convalescent serum and the anti streptococcus serum of Rosenow but the immunization was much more complete when human convalescent serum was used.

In conclusion the author states that the treatment indicated for the first or active stage of acute

poliomyelitis is absolute rest general treatment for fever early and frequent spinal drainage to keep the spinal pressure down and the intravenous or intra muscular administration of specific serum.

ROBERT C. LOVERGAN M.D.

MacAusland W R. *Deformity in Infantile Paralysis Its Prevention and Correction* New England J Med 1929 60: 28

For the prevention of deformity in infantile paralysis the limbs should be placed in a position which will relax the paralyzed muscles. In most cases the foot should be at a right angle the knee in extension the hip in abduction the elbow at a right angle the shoulder in abduction and the wrist in hyperextension. These positions may be maintained by light plaster casts or well fitted braces. In cases of paralysis of the back the use of a plaster shell with the spine in slight hyperextension is advisable. While the limbs are in the casts undue atrophy of the muscles may be prevented by massage and exercise.

The method by which deformity is corrected depends upon the degree of the deformity. Slight contractures of the soft tissues and very early bony deformities may be corrected by manipulation. In most cases tenotomies should be avoided until manipulative treatment has been given a thorough trial. Operations of consequence should be delayed until at least two years after the acute stage of the disease and until the child is at least seven years old. Tendon transplantations have proved unsatisfactory as a rule but are of value in conjunction with stabilizing operations on bones. They may give successful results also in selected cases of paralysis of the arm and hand in which weight bearing is not required.

In cases of extreme deformity it is necessary to attack the bone to secure correction and maintain a stabilized new position. The foot is the most common site of such deformities. Of the many methods suggested for the correction of severe deformities of the foot astragalectomy and subastragaloid arthrodesis are used most frequently. Astragalectomy is the method of choice for talipes calcaneovalgus and is a very good operation also for flail foot equinus equinovalgus severe claw foot and certain cases of valgus and varus deformity. When properly performed it shifts the weight of the body forward on the foot by displacing the foot backward under the leg. Restoration of balance by this means is especially successful when the peroneal tendons are transplanted into the tendon of Achilles in conjunction with astragalectomy.

Subastragaloid arthrodesis is a good operation for milder cases of varus valgus and calcaneus. It is

best done after the twelfth year of age. Lateral deformity is prevented by fixation of the subastragaloid joints and balance is restored by backward displacement of the foot.

Arthrodesis of the shoulder may be done in cases with strong scapular muscles and paralysis of the deltoid and other shoulder muscles. When the shoulder is arthrodesed in from 50 to 60 degrees of abduction and from 10 to 15 degrees forward from the sagittal plane the substitution of the scapular movement provides good function.

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increasing concentration of bacteriophage so both dissociation and phagocytosis of the infecting organisms are accelerated PAUL C. COLONNA MD

**Durman D C Myeloma of the Spine** *Ann Surg* 1928 lxxxviii 975

The author reports a case of multiple myelomata in which the primary growth was believed to be in the spine

He states that the outstanding symptom in all cases of spinal myeloma is pain due to erosion of the periosteum from within and pressure upon the nerve roots following collapse of the vertebrae. The next most characteristic clinical sign is a progressive deformity resulting in a posture in which the abdomen protrudes the shoulders are held back the head is held forward and the feet are wide apart

The laboratory findings include a secondary anemia with frequently a leucocytosis. On account of the extensive medullary involvement which is often present a blood dyscrasia is not surprising. *Bence Jones bodies* are probably present in the urine at some time in all cases but frequently they are not found and they are not essential for the diagnosis

In the author's opinion the most valuable diagnostic aid is the roentgen ray. In the roentgenogram all bones except the vertebrae have a typical worm eaten appearance with numerous areas of decreased density. This finding is especially marked in the skull. In the spine there is extensive rarefaction with flattening of the vertebral bodies but little or no narrowing of the intervertebral cartilages

CHESTER C GUY MD

**Pittoni E An Enchondroma of the Right Transverse Process of the First Lumbar Vertebra Revealed by Roentgen Examination** (*Enchondroma dell'apofisi trasversa destra della prima vertebra lombare messo in evidenza con l'indagine radiologica*) *Riforma med* 1928 xlv 1208

The patient whose case is reported was a man twenty five years of age with a negative history. When examined for the army he was dismissed on account of gibbus. In February 1926 he began to have slight pain at the base of the right thorax near the spinal column. This pain was continuous. At first it was not very intense but it increased in severity until finally there were paroxysms of severe pain radiating to the right thigh. There was no fever emaciation or loss of appetite. The patient's physician sent him to the hospital for the application of a plaster cast for Pott's disease

Inspection revealed a tumor with its left boundary almost on the line of the spinous processes its right side a little beyond the midscapular line its top at the level of the twelfth rib and its base below a transverse line passing through the spinous process of the third lumbar vertebra. The neoplasm was oval hard smooth and fixed to the deep tissues. It did not change position with movements of the trunk. The skin over it was normal. Palpation was not

painful. Exploratory puncture was negative. Roentgen examination showed that the transverse process of the first lumbar vertebra had disappeared while that of the second was shortened and deformed as if by a weight resting upon it. There was an opaque zone in the region of the tumor into and around which the author injected lipiodol. The examination with lipiodol showed that the tumor originated from the right transverse process of the first lumbar vertebra that it had a thick capsule and that there were cystic spaces in its center

The neoplasm was removed on November 20 under tropococain spinal anesthesia. Examination showed it to be an enchondroma with cystic degeneration in the center

The patient was discharged as cured at the end of two weeks. A year later he was in excellent condition with no symptoms to indicate either local recurrence or metastasis. AUDREY G MORGAN MD

**Guillaume Louis The Anatomical Findings in a Case of Rupture of the Quadriceps Tendon** (Note à propos d'un cas de rupture du tendon quadriceps: constatations anatomiques) *Bull et mem Soc nat de chir* 1928 liv 1074

A gymnast fell from a horizontal bar and landed on his feet in a squatting position. He felt a violent pain in his right thigh and was unable to rise. On examination a deep depression was found immediately above the patella. The patient could not raise his heel from the bed. Over the anterior surface of the knee there was an extensive ecchymosis. A diagnosis of rupture of the quadriceps tendon was made

At operation the region above the patella was exposed through a median longitudinal incision. The rupture of the tendon was found to be clean cut and to include the lateral aponeurotic expansions and the synovial membrane of the joint. The three easily distinguished layers in the tendon were sutured separately. The deep layer consisted of the tendon of the vastus intermedius and lay on the anterior surface of the patella in a large hematoma. This was sutured to the under surface of the tendon of the rectus femoris. The middle layer was formed by the interlacing fibers of the tendons of the vastus lateralis and vastus medius. Here the rupture was vertical. This breach was closed and the tendons were sutured to the borders of the rectus femoris tendon. The superficial layer which was ruptured transversely consisted of the rectus femoris tendon. The two ends were united by interrupted sutures

Massage was begun on the fifth day and mobilization on the ninth day after the operation. Fifteen days later the patient was able to walk and eventually he made a complete functional recovery

The anatomical findings at operation conformed to the description given long ago by Poirier. The usual tear of the synovial membrane is explained by the distention of the muscle fibers termed the articularis genu muscle. The vasti tend to separate in the midline but preserve their connections with

the patella hence the necessity of suturing their borders to the tendon of the rectus femoris to re-establish their function. ALBERT F. DEGROAT, M.D.

Hesseler O. The Pathogenesis Clinical Aspects and Treatment of the Flail Knee in Its Relation to the Collateral Tibial Ligament (Ueber die Pathogenese Klinik und Therapie des Wackelknees in seiner Beziehung zum Ligamentum collaterale tibiale). *Buerch Abhandl. d. Gesamtgeb. d. Med.* 1928 v. 145

The author discusses only cases of flail knee in which the internal lateral ligament is directly or indirectly responsible for the laxity of the joint. The most important defect in the ligament causing the condition is a direct break. This may result from cessation suppurative degeneration or direct traumatic division. It is rare as compared with the indirect break which may result from distortion abduction hyperextension and luxation. In the indirect break the ligament itself is not ruptured but is torn loose from its insertion into the bone. The internal lateral ligament is injured much more frequently than the external lateral ligament.

Another cause of lateral mobility of the knee is overstretching of the internal lateral ligament. Direct overstretching may be caused by an exudate in the knee joint. It may result also from prolonged extension treatment of a fracture of the thigh. In direct stretching of the internal lateral ligament may be produced statically and in neurological conditions such as syringomyelia myelitis and peripheral paralysis.

In the diagnosis of a flail knee the lateral movements of the joint are of chief importance. While the thigh is fixed the leg can be rotated externally at the knee joint and sometimes also internally. The examination should be made with the leg completely extended. Among the sequelae of flail knee are arthritis deformans and chronic serous arthritis.

The treatment must be directed toward restoration of the function of weight bearing. Conservative treatment consists in the application of a splint or the use of measures to strengthen the musculature. The operative treatment is directed against the injured ligament. When the ligament has been divided it must be sutured. When it has been stretched reefing of the capsule and the ligament comes up for consideration. In some cases a plastic operation on the ligament may be advisable. The author describes an operative procedure which was first used by Heller and consists essentially in suturing the tendons of the gracilis and semitendinosus muscles to the capsule of the knee and to the internal condyle of the femur.

The article is supplemented by an extensive bibliography.

Mouchet A. Metatarsal Epiphysitis. *J. Bone & Joint Surg.* 1929 xi 87

Metatarsal epiphysitis is known also as Koehler's disease of the second metatarsophalangeal articulation.

second Koehler's disease (to distinguish it from Koehler's disease of the tarsal scaphoid) infraction of the second metatarsal head (Freiherg) and osteochondritis of the metatarsal heads.

It is less rare than has been thought but unless a roentgen ray examination is made it remains unsuspected. It occurs most often between the ages of twelve and twenty years and more frequently in females than in males. As a rule it involves the head of the second metatarsal but has been found also in the third and the fifth metatarsal. Its onset is slow with pain in the forefoot at the level of the second and third metatarsal heads which is increased on standing or walking and ceases after rest. There is no deformity and no loss of mobility. Pain is caused by pressure at the site of involvement and there may be slight swelling. Frequently the anatomical bone changes do not appear in the roentgenogram until after several weeks. The roentgenogram shows an irregular indented contour with alternate zones of rarefied and condensed bone. At times there is a well defined cuneiform osseous zone suggesting a sequestrum. The roentgen ray appearance is very characteristic.

In the author's opinion the condition is an attenuated osteomyelitis. The prognosis is good there being a tendency toward spontaneous cure. Mouchet says however that the course of the disease is long—at least eighteen months—and unless proper treatment is given the lesion may result in disabling arthritis deformans.

The author recommends the use of crutches with immobilization in plaster for six months if the case is seen early and resection of the metatarsal head if the condition is advanced.

ROBERT C. LOVERGAN, M.D.

## SURGERY OF THE BONES JOINTS MUSCLES TENDONS ETC

Calissano G. Interposition of Fixed Cartilage Between Bone Stumps for the Purpose of Producing a Nearthrosis (I percuore di interposizione di cartilagine fissata fra monconi ossei al fine di ottenere una nearthrosi). *Arch. ital. di chir.* 1928 xxi 206

Though good functional results have been obtained experimentally in ankyloses it cannot be said that heretofore a true nearthrosis has been produced. The formation of a new joint requires two bone ends capped with articular cartilage to prevent their fusion and a joint capsule containing synovial fluid.

The author describes experiments in which he took disks from the costal cartilages of calves fixed them in 95 per cent alcohol and then implanted them in the ribs of guinea pigs. The guinea pigs were killed and the grafts examined after periods varying from a month and a half to ten months.

In all of the earlier stages there was solid fixation between the cartilage disks and the bone ends. In the specimens examined after ten months the en-

of the two bones were covered with a thin layer of connective tissue derived from the periosteum. Between this layer and the disk of cartilage on each side there was a cushion of tissue made up of stellate cells and showing large meshes containing in some places a granular débris and in other places residues of delicate fibrils. Toward the center of the cushion the areolar tissue had disappeared and there was a cavity containing only a delicate reticulum of coagulated substance.

These findings show that after a long time the conditions around the grafted cartilage are similar to those found in the developing joints of the fetus there being a tendency on the part of the grafted cartilage to soften and produce a fluid resembling synovial fluid.

The experiments indicate that if a joint is to be formed by the grafting of cartilage between two bone ends equal pressure must be exercised by a smooth and resistant surface on the callus at the ends of the stumps to form an articular cartilage and there must be movement of the two ends to form a synovial cavity. AUDREY C. MORGAN, M.D.

**Galeazzi, R. The Treatment of Scoliosis. *J. Bone & Joint Surg.* 1929, xi, 81.**

In cases of scoliosis the author gives preparatory mobilizing treatment and then proceeds to over correct the deformity with the aid of an apparatus he has devised.

The apparatus consists of two independent units one of which fixes the scapular region and the other of which fixes the pelvic region. The patient is placed in the apparatus with the trunk horizontal

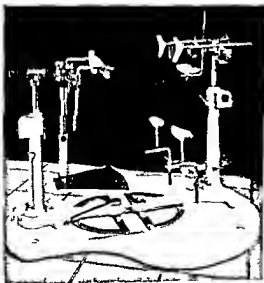


Fig. 1. The author's apparatus for the correction of scoliosis.

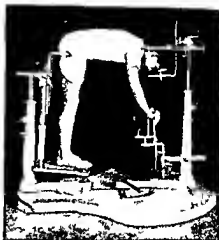


Fig. 2. Patient in apparatus. Feet on movable platform. Pelvic girdle retained. Shoulder girdle retained. Hand on rest and forehead on rest.

and the hips and arms flexed so that the spinal column is suspended from two end buttresses similar to its position in a quadruped. By varying the distance between these two end units and their relative heights above the ground it is possible to place the spine in the most favorable position for correction. When the proper position has been obtained the two end units are secured at the exact reciprocal distance necessary for the apex of the dorsal and lumbar curves to correspond exactly to the centers of the rotatory movement and lateral flexion of the two units (i.e. in a double curve). The scoliotic column is fixed at the two extremities by the application of plaster of Paris over two belts. Later these two portions are joined by two intermediary sections. When the cast is finished the patient stands in a bent over position and walks with the body flexed and bent toward the convexity as in the Abbott method but not so markedly. A successful result depends upon a long preparatory mobilizing treatment.

The superiority of the treatment to other methods seems to be due to the rationale of the correction which is effected by derotation and deflexion methods instead of by direct force.

ROBERT C. LOVERGA, M.D.

**Kleinberg, S. The Results of Spine Fusion for Scoliosis. *J. Bone & Joint Surg.* 1929, xi, 66.**

In the operation performed by the author for structural scoliosis the posterior arches of the vertebrae are denuded, the articulations scarified and segments of bone from the laminae are elevated and placed across the interlaminar spaces. A large beef bone graft (or a rib graft) is then inserted on the concave side of the curve and each spinous process is split into five or six fragments in order to obtain

extensive contact between adjacent vertebrae and between the graft and normal bone

Theoretically the primary curve should be fixed but it is sometimes difficult to determine which is the primary and which the secondary curve. The fusion extends beyond the limits of the curve to normal or at least transitional vertebrae. As a rule it is found necessary to fuse the dorsal area. In a compound curve the dominant curve or the more deformed segment is fused.

The operation is preceded by a period of from four to eight weeks of recumbency on a convex frame with traction. After the operation the patient is kept recumbent on the convex frame for from six to eight weeks and is then discharged wearing a plaster cast. The cast is changed every two months and at the end of from nine to twelve months is replaced by a celluloid corset to be worn for one year.

The operation is serious and difficult and should be performed only by those who have acquired the requisite skill and with the aid of an expert anæsthetist.

The author has performed it in ninety cases. Recently he has re-examined fifty-four patients who were treated from one to seven years ago. With regard to the effect of the operation on the patient's growth he states that in thirty-one of the fifty-four patients there has been an increase in length of from 1 to 6 in. The results of the operation were excellent in 78 per cent of the cases, good in 13 per cent, and poor in 9 per cent. In the seven cases with good results the back appears satisfactory to the patient and his family, but the roentgenogram shows a doubtful or slight increase of the spinal curve. In all of the cases with poor results there is definite evidence of osseous fusion of the vertebrae operated upon and no sign of a break in the union of the vertebrae. In two cases the deformity has become steadily worse and there is no apparent explanation of the failure. In 91 per cent of the cases the deformity has been arrested, the appearance of the back is satisfactory, and the patient has gained weight and strength and is free from backache.

ROBERT C. LONGRAN, M.D.

## FRACTURES AND DISLOCATIONS

Wijnen H. P. Treatment of Fractures with the Equilibrated Swinging Traction Apparatus. *Surg. Gynec. & Obst.* 1929, XLIII, 90.

The suspension apparatus known as the Balkan frame was originated by Metz of Amsterdam in 1903. It acquired its present name when it was introduced into Serbia by a Dutch ambulance unit.

In the original treatment for fracture devised by Metz the patient was placed in a half-sitting position with the normal leg braced against a solid box at the foot of the bed. Traction was obtained by (1) a weight suspended to adhesive straps, (2) the weight of the leg directed obliquely down at an angle of 20 degrees, and (3) the horizontal components of the forces acting upon the cords which suspended the

leg in an oblique direction. Countertraction was obtained by (1) the push of the uninjured leg against the box, (2) the friction of the body on the bed, and (3) a woolen sling which encircled the groin of the uninjured side and was tied to the head of the bed. The semi-sitting position is of advantage especially in the cases of elderly patients, as it tends to prevent the development of pneumonia.

In the Noordenbos Surgical Clinic in Amsterdam the Steinmann skeletal traction is now used almost exclusively instead of adhesive straps. Rigid side splint, separate for the leg and thigh and allowing knee motion, are used for suspension instead of the original hammock and rings. The Steinmann nail, driven through the spongy bone under operative technique but without a preliminary skin incision. When there is much overriding of the fragments the skin is held retracted proximally while the nail is being inserted. Once a week the bandages around the ends of the nail are removed and the area is disinfected. On removal of the nail one end is sterilized with alcohol and picric acid and the other end is grasped with the forceps and pulled out. Nails made in 1 piece are used. The occasional occurrence of infection or a persistent sinus is regarded as trivial as compared with the poor results of treatment without direct skeletal traction.

For the treatment of fracture of the femur a seat as wide as the bed, 60 cm. long and from 40 to 45 cm. high and having a padded back and sides is constructed at the head of the bed. Abundant freedom of body motion is allowed. The Steinmann pin is inserted at right angles to the general long axis of the thigh (not the long axis of the bone). Persistent angulation of the fragments is corrected by differential extension on the ends of the nail. The leg and thigh are suspended independently, each to its own overhead arch. In order to prevent the constriction that is caused by a cloth hammock, the thigh is placed in a wide curved gutter of thin metal. When the fracture is in the lower end of the femur and there is posterior displacement of the distal fragment, the knee is moderately flexed. The extension then tends to pull the displaced fragment forward by leverage, the condyles in contact with the articular surface of the tibia acting as a fulcrum. In cases of subtrochanteric and intratrochanteric fractures abduction is obtained by means of an adjustable pulley on an adjustable horizontal bar at the foot of the bed.

Fractures of the leg bones are treated by extension by means of a pin through the os calcis if the fracture is in the distal half or is compound. When the fracture is in the proximal half the pin is introduced into the tibia near the distal end. Suspension is obtained by 2 hammocks, independent of each other for the distal and 1 for the proximal fragment. By this means the position of the fragments may be changed to effect reduction.

The suspension method is especially valuable for fractures involving joints. When the knee joint is involved the nail for extension is placed through the distal end of the tibia. Joints involved by fractures



are given early active and passive motion which is easily done with the suspension method

Fractures of the humerus are treated by suspension and traction with the pin through the olecranon and the elbow at a right angle. If the break is at the proximal end the humerus is abducted

Fractures of both the radius and the ulna which cannot be reduced by conservative means are treated by suspension traction one pin being placed through the olecranon and another through the distal ends of the two bones. The elbow is at a right angle and the forearm vertical. A weight is hung on the pin through the olecranon and the usual pulley cord and weight are attached to the distal pin

The author tabulates the results in 157 fractures of the lower extremity and 49 fractures of the arm which were treated by this method at the Binnen Gasthuis in Amsterdam. In the cases of adults the period of hospitalization was as follows: fractures of the thigh seventy three days; fractures of the leg fifty two days; fractures of the upper arm twenty eight days; and fractures of the forearm thirty days. There were 6 cases of infection at the nail wound. In 1 the wound drained for a year but in the others it closed in an average of six days

WILLIAM A. CLARK, M.D.

Silfverskiöld, N. The Treatment of Fracture Dislocations of the Shoulder Joint. *Acta chirurg Scand* 1928 LXXV 227

The author reviews the literature on fracture dislocations of the shoulder joint and reports sixteen cases. At the time of the injury his patients were between twenty five and fifty years of age. In nine of the thirteen cases in which reduction by open operation was done re-examination showed a very good or good functional result. In six cases in which the displaced head fragment had lost all connection with the capsule or periosteum bony union with practically normal function occurred after open reduction in four

The union obtained in these cases is compared with that obtained in medial fractures of the neck of the femur. The author considers it possible that the stripped displaced head fragment is always capable of bony union, that union and non union after reduction depend exclusively upon the treatment. With regard to the treatment he draws the following conclusions:

1. The contra indication is marked impairment of the general health

2. In the presence of contra indications manipulative reduction may be tried under ethyl chloride anesthesia in some cases

3. Reduction by open operation is to be considered the routine method and should be done as soon as possible after the injury

4. Primary resection is indicated only in cases of exceedingly severe comminuted fractures especially those of the head and in cases in which the general condition will permit only a relatively brief open operation

5. After resection of the head arthrodesis (and perhaps arthroplasty) may sometimes give better functional results than mere adaptation of the upper end of the shaft to the socket

6. In reduction by open operation loose bone splinters should also be fitted in and the large fragments carefully approximated or wedged in. Flaps of capsule or periosteum should be replaced and if possible sutured. Occasionally periosteal transplantation may be advisable. If osteosynthesis is found necessary, the use of a tibial graft, chromicized catgut, or small metallic nails should be considered

7. The arm should be fixed in the scapular plane in abduction of 80 degrees and external rotation of 45 degrees. The fixation should be done on an abduction splint made ready before the reduction and very firmly fixed to the trunk

8. As a rule the time of fixation should not be less than three weeks but its length should be determined by the roentgen findings and the way the head follows smaller rotary movements of the arm

9. Re-educative movements should be supervised by an expert and continued for from one half to one year

Ellason, E. L. Fractures of the Clavicle. *J Am M Ass* 1928 XL 1074

This article is based on a series of 500 cases of fracture of the clavicle. Forty-one per cent of the patients were children under ten years of age. In 10 cases the fracture occurred at birth. In adults the fracture is usually due to indirect violence and as a rule is transverse and occurs in the outer third of the bone. Fractures at the outer end of the clavicle may be confused with acromioclavicular dislocation. In the cases of children careful attention to detail in the roentgen examination is necessary to avoid overlooking a greenstick fracture

The fact that eighty five methods have been suggested for the treatment of fracture of the clavicle is evidence that an ideal method has not yet been found. The treatment should depend somewhat upon the wishes of the patient. If the patient desires the best possible anatomical result without shortening, he must submit to recumbent treatment on his back with the arm of the affected side abducted with weight extension for about three weeks. For ambulatory treatment the most satisfactory method is the use of a posterior splint which pulls the shoulder backward and because of the upward slope of the chest wall also upward. Any dressing which binds the arm to the body will not maintain the backward position of the shoulder. As a rule good union and good function are obtained. Open reduction is seldom necessary

WILLIAM A. CLARK, M.D.

Thomas, T. T. A Contribution to the Mechanism of Fractures and Dislocations in the Elbow Region. *Ann Surg* 1929 LXXXV 108

In experiments on cadavers the author found that when direct force is exerted on the hand as in a fall it is transmitted up the arm causing flexion of the

elbow The upward thrust may either drive the radius and ulna upward and backward behind the end of the humerus or may break off the end of the humerus at its point of least resistance just above the condyles As the radius and ulna are held together by the strong interosseous band as well as by the ligaments at both ends, they act as one bone when they receive such a longitudinal thrust

The only injury to the skeleton that has generally been ascribed to a fall on the hand is the Colles fracture but the author contends that such a fall will frequently cause fracture or dislocation at the flexed elbow rather than at the wrist

In elbow fractures the distal fragment of the humerus almost always goes upward and backward but may also go laterally in either direction depending upon whether the impact is received on the flexor or the hypothenar side of the hand This is true also of the distal fragment in Colles fracture Accordingly there is a close resemblance between such breaks at the wrist and the elbow

These fractures are more easily explained by flexion of the elbow with the fracturing force than by extension When in the author's experiments the elbow was fixed in flexion fracture of the coronoid process was produced five times in ten trials but when the elbow was in extension the fracture was produced only once in ten trials It practically never occurs without dislocation of the ulna The upward thrust of the coronoid is the force which breaks off the condyle and sometimes also splits them vertically An important factor in the splitting is the wedge effect of the ridge on the coronoid and olecranon

Anterior dislocation of the radius may occur with or without fracture of the proximal end of the ulna It may be produced by a fall on uneven ground in which a resistant object strikes only the radius near its head If the force strikes the ulna also it will cause either a fracture of both bones near the proximal end or a fracture of the ulna and dislocation of the radius

WILLIAM A CLARK M D

Edwards H and Clayton E B Fractures of the Lower End of the Radius in Adults *Brit J* 1929 1 61

The authors review 424 cases of fracture of the lower end of the radius which were treated at King's College Hospital in the three years from 1924 to 1926 Three hundred and thirty nine were of the Colles type and 85 were backfire fractures

The majority of the fractures of the Colles type were transverse and occurred at the upper limit of the radial surface which enters into the formation of the inferior radio ulnar joint In 158 of these cases the styloid process of the ulna was fractured The scaphoid was fractured in addition to the radius or ulna in only 1 case

The most common type of backfire fracture was an oblique fracture through the radial styloid with or without fracture of the ulnar styloid

In the discussion of the treatment emphasis is placed upon the importance of perfect reduction of

the backward tilt of the radial articular surface The radial displacement of the hand and backward displacement of the fragment must also be corrected After the reduction the authors prefer to use Carr's splint in the majority of cases In the cases of old patients massage is begun during the first week but in the cases of young patients may not be given until after fourteen days In the cases reviewed the average duration of treatment was nine and a half weeks

PAUL C COLOMBA M D

Magliulo A Fractures of the Base of the First Metacarpal with Special Reference to the Mechanism of Their Production (Le fratture della base del primo metacarpo con speciale riguardo al loro meccanismo di produzione) *Chir d organi di movimento* 1928 XII 587

The author accepts Tanton's classification of fractures of the base of the first metacarpal into two main groups intra articular fractures and extra articular fractures The first include transverse and the oblique varieties The second are represented by Bennett's fracture and Rolando's fracture

Bennett's fracture is usually described as an oblique fracture involving the median volar portion of the articular surface which is associated with slight displacement of the lesser fragment and apparent subluxation of the thumb at the carpo metacarpal joint

Rolando's fracture is Y shaped and forms three fragments It is rarely associated with subluxation of the thumb

In a period of fourteen months the author saw nine fractures of the base of the first metacarpal Four were of the Bennett type and five were extra articular These cases are reported in detail The author's conclusions are as follows

1 Fractures of the base of the first metacarpal while rare are frequent as compared with fractures of the other metacarpals and fractures of the diaphysis and epiphysis of the bone

2 While the most common cause of such fractures is indirect violence such as is sustained in a fall on the hand the fractures may result also from trauma to the head of the first or second phalanx of the thumb

3 The mechanism of production of the fractures is very complicated

4 As a rule the fractures are complete

5 The symptoms vary according to the type of the fracture

6 In the diagnosis the roentgen ray is indispensable

7 When the displacement of the fragments is slight the prognosis is favorable Bennett's fracture may result in great functional incapacity complicated in some cases by pseudarthrosis or a deforming callus which interferes with manual labor

8 The treatment is non-operative or operative Operative treatment is indicated in severe fractures in which the displacement of the fragments cannot be corrected by the usual measures for immobilization

of the thumb. Very often good results are obtained from immobilization of the thumb in a position of half abduction and slight flexion for from ten to twelve days by means of a plaster of Paris dressing or continuous traction followed by active movements and gentle massage. KELLOGG SPEED M D

Musil V. Dislocating Coxa Valga. Clinical and Etiological Considerations (Coxa valga luxans Klinisches und Aetiologisches) *Casop lek zsk* 1928 LVII 971 1015

Dislocating coxa valga as described by Klapp is a condition in which a valgus position of the neck of the femur is associated with subluxation of the head of the femur in a flat acetabulum. It usually begins in childhood with pain in the hip and limping. Sometimes it is preceded by trauma. The clinical signs are outward rotation of the thigh without the restriction of abduction which occurs in Perthes disease but with lateral protrusion of the trochanter a depression in the groin a waddling gait and atrophy of the extremity. The roentgenogram shows

that the acetabulum is irregularly elongated upward the head of the femur articulates only with its median portion and the epiphyseal head is flattened into a wedge shape and displaced laterally.

The author reports the case of a man forty two years of age who fell upon his left hip and thereafter experienced difficulty in walking and pain in both hip joints which became so marked that ultimately he was unable to walk at all. Examination revealed bilateral dislocating coxa valga with marked changes due to arthritis deformans.

Musil assumes that the primary condition in dislocating coxa valga is a congenital flattening of the acetabular cavity and that the valgus deformity is a secondary phenomenon analogous to the changes following non operative reposition of the congenitally dislocated hip. He believes that dislocating coxa valga represents on the one hand the transition to congenital dislocation of the hip and on the other the transition to arthritis deformans and the osteochondritic changes occurring in the hip joint in Perthes disease.

HAIN (Z)

# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

## BLOOD VESSELS

Gaglio V. Terminal Forcippresure of the Arteries  
(Sulla forcippresura terminale delle arterie) *Arch  
del chir* 1928 xii 165

Gaglio describes experiments in forcippresure of the arteries which show that the compressed vessels react in the same way whether they are of the elastic or the muscular type. A thrombus always forms within seventy-two hours. The thrombus of the central end is more developed than that of the peripheral end but this is the only difference between the two ends. It is evident that the thrombus of the arteries is not the essential factor in either temporary or permanent hæmorrhage as in one experiment a secondary hæmorrhage occurred through a short laceration in the wall a few millimeters from the point of pressure at a time when long thrombi were present on both sides of the point of compression. It is demonstrated also in these experiments as in those reported by Vassata that the part subjected to the direct pressure of the forceps does not cause temporary or permanent hæmorrhage.

In addition to the signs of regression such as desquamation of the endothelium and splitting of the internal limiting membrane and the elastic fibers there are signs of reparation which show that the final hæmostasis is due to an active process of proliferation of the cells of the media and the sub-endothelial layer which begins at the end of the first hour at the transition from the part on which the forceps is pressing to the arterial cuff de sac and which within twenty-four hours has extended some distance from the forceps. Within seventy-two hours at the point where the new formation began the two walls of the artery are completely joined by newly formed connective tissue in which there are no normal arterial elements except elastic fibers. The thrombus doubtless has some function in bringing about hæmostasis but the author thinks it is only the auxiliary function of decreasing the blood pressure and thereby protecting the proliferative process of repair.

In another series of experiments Gaglio tried to determine the end results of forcippresure on the arteries. He found that the organization of the thrombus and the cicatrization of the vessel are the same as after ligation. The organization of the thrombus is accomplished within from fifteen to twenty days by connective tissue proliferation. At the point of pressure the vessel is transformed into a solid cord. The proliferation does not stop at the cuff de sac but proceeds a little way beyond it. The organized tissue which fills the lumen of the vessel becomes lined by newly formed endothelial cells which originate from the part of the endothelium

that is left intact. The endothelium does not take any other part in the organization of the thrombus but possibly may help in the formation of new capillaries which according to the author's findings seem to come from the vasa vasorum. New elastic fibers appear quite late.

The practical conclusion to be drawn from these experiments is that forcippresure is a good method of inducing hæmostasis. AUDREY G. MORGAN, M.D.

Rallsback O. C. and Dock W. Erosion of the Ribs Due to Stenosis of the Isthmus (Coarctation) of the Aorta. *Radiology* 1928 xii 58

The authors report a case of asymptomatic stenosis of the isthmus of the aorta in which with a comparatively slight superficial collateral circulation there were numerous erosions of the third to the ninth rib as evidence of dilated intercostal vessels. The delay in transmission of the pulse to the femorals confirmed the existence of stenosis of the aorta.

The erosion of the ribs was first recognized at the time the patient entered the hospital for treatment of a gastric disturbance. The diagnosis of coarctation of the aorta was suggested to the authors by chance finding of a description by Walshe in 1876 of erosion of the ribs in that condition. The pulse transmission rate was therefore measured. The femoral pulse was found to arrive later than the radial pulse. Under normal conditions the femoral pulse arrives from .01 to .02 seconds before the radial pulse.

The authors believe that costal erosion is undoubtedly pathognomonic of coarctation of the aorta.

JAMES B. BROWN, M.D.

Gieritz K. H. and Crafoord C. Thrombo Embolic Disease and Its Surgical Treatment. *Acta ch i g Scand* 1928 lxi 121

The authors state that although thrombo embolic disease appears to be increasing, the increase may be due only to more frequent diagnosis.

The condition may be divided into the following types: (1) obstructive pulmonary embolism; (2) non-obstructive pulmonary embolism with manifest thrombosis; (3) non-obstructive pulmonary embolism without manifest thrombosis; and (4) manifest venous thrombosis without pulmonary emboli.

True thrombo-embolic disease is a condition having a definite relation to surgical procedures. It occurs more often and in more malignant forms in surgical than in medical wards and there can be no doubt that of patients admitted to surgical wards those undergoing an operation develop thrombo embolic disease more frequently than those who are not operated upon.

Of patients operated upon the disease occurs exceptionally in those subjected to operations on the

head or trunk and rarely in those subjected to operations on the upper extremities or the chest

Patients with varices—thrombophlebitis in particular—are very prone to develop thrombo-embolism. As a rule neither the thrombus nor the embolus undergoes liquefaction

Raising the foot of the bed and all other measures adopted to establish better circulation in the veins of the lower extremities and the pelvis seem to be without importance

Thrombo embolic disease may be present without any direct clinical signs of either thrombosis or embolism. As a rule however there is a subfebrile temperature and less often a certain impairment of the pulse

The generally assumed tendency of the manifest thrombosis to be localized to the left common iliac vein and its root is not clearly borne out by the authors' cases

Besides the local clinical signs of manifest thrombo embolism the temperature and the condition of the pulse should be noted. A typical feature of the disease is the subfebrile and febrile arched curve with or without Mahler's sign but a more or less regular subfebrile temperature without or with a slight postoperative effect on the pulse in cases which normally should be without such changes is also an exceedingly suspicious sign and occurs almost regularly as a premonition of venous thrombosis as well as pulmonary embolism

Combined with the typical changes in the temperature and pulse the attack of stitch like pains or

hæmoptysis confirms the diagnosis of lung embolism even without manifest thrombosis

Obstructive pulmonary embolism presents almost without exception such a typical clinical picture that provided the case is carefully observed no doubt need be entertained as to the diagnosis. The condition is usually preceded by a suspicious subfebrile temperature otherwise unexplainable very rarely by slight attacks of lung emboli and exceptionally by venous thrombosis. In most cases it develops suddenly with typical symptoms the most usual of which are an intense pallor disappearance of the pulse and loss of consciousness. Other common symptoms are a sense of oppression air hunger and a mild cyanosis with a typical venous pulsation above the clavicles the expression of the spasmodic attempts of contraction on the part of the right ventricle

In 50 per cent of the authors' cases of obstructive emboli the whole thrombus became detached. In the others larger or smaller fragments of thrombi were left in the peripheral veins

Death rarely occurs instantly in obstructive lung embolism. In most cases there is sufficient time after the onset of the first attack to allow a Trendelenburg operation

In conclusion the authors state that as we have as yet no knowledge of the cause of thrombo-embolic disease it is impossible to suggest a procedure for its prevention. When once it sets in nothing can be done to arrest its course. The one means of saving life is the Trendelenburg operation

# SURGICAL TECHNIQUE

## OPERATIVE SURGERY AND TECHNIQUE POSTOPERATIVE TREATMENT

Roth P Oxygen Therapy *Anest & Anal* 1929 viii  
47

Lack of a sufficient supply of oxygen causes progressive damage to the central nervous system heart and other organs. The injurious effects of anoxæmia may soon become irreparable. Even though the cyanosis and respiratory and circulatory disturbances can be improved the condition may terminate fatally if it is treated too late.

Nervous tissue is the most easily damaged by insufficient oxygen. Cardiac muscle is more resistant. Three types of anoxæmia are described.

1 The anoxic type. This is found in pulmonary conditions interfering with respiratory exchange in the lungs such as pneumonia severe bronchitis asthma and emphysema.

2 The stagnant type. This is due to circulatory disturbances especially of cardiac origin.

3 The anemic type. This is due to a lessened capacity of the blood to carry oxygen caused by a low hæmoglobin content a low red cell count or fixation of the hæmoglobin by carbon monoxide.

The symptoms of anoxæmia vary according to the suddenness and completeness with which the supply of oxygen to the tissues is cut off. The sudden cutting off of oxygen causes loss of consciousness convulsions and death in a few minutes. A less sudden shutting off causes hyperpnœa a rapid and feeble pulse and impairment or loss of consciousness. In these conditions artificial respiration is indicated. When the deficiency of oxygen occurs gradually the breathing is often of the periodic type the mental faculties are impaired and the patient suffers from nausea vomiting headache and diarrhoea.

Oxygen can be administered by means of a rubber balloon nasal tube mask bed tent or oxygen therapy chamber.

In the induction of anæsthesia safety depends in large measure upon the prevention of anoxæmia or asphyxia by the timely use of oxygen and carbon dioxide.

EARLE I GREENE M D

Magliulo A The Effect of Periarterial Sympathectomy on the Taking of Autoplastic Skin Grafts. (La sympatectomia periarteriosa sul manico d'attaccamento degli innesti cutanei autoplastici). *Sperimentale* 1928 lxxviii 635

In experiments on rabbits burns of the skin were produced with the cautery and autoplastic skin grafts were applied from ten to thirty days later. Periarterial sympathectomy was done before at the time of or after the grafting. The periarterial sympathectomy was found to have a good effect on

the taking of the grafts. It exerted such an effect not only on the side on which it was performed but also on the opposite side. On the side on which it was performed the grafts took early and completely and showed regeneration of the superficial and deep cells of the epidermis the adnexa and the dermis. Other conditions being equal the grafts took soonest and most completely when the sympathectomy was done before or at the time of the grafting. The chief effect of the sympathectomy was improvement in the blood supply of the graft and its bed. The taking of the graft depended also upon a good technique strict asepsis and measures to prevent drying of the superficial layers of the cutis.

AUDREY G MORGAN M D

## ANTISEPTIC SURGERY TREATMENT OF WOUNDS AND INFECTIONS

Arrivat The Treatment of the Wound in Tetanus. Cure of a Severe Case of Postoperative Tetanus by Amputation. (À propos du traitement de la plaie tétanique guérison par amputation d'un cas grave de tétanos post opératoire). *Bull et mém Soc nat de chir* 1923 liv 2071

Arrivat emphasizes the necessity of treating a wound that has given rise to tetanus. Such treatment is too often regarded as useless. The local application of antitoxin or even amputation is a valuable adjunct to the intravenous and intraspinal treatment. The following illustrative case is cited.

A man twenty one years old was operated upon for a rapidly progressing tuberculous osteo-arthritis of the ankle joint. The operation consisted in resection of the astragalus curettage of the calcaneum and the articular surfaces of the tibia and fibula and excision of the fistulous tract. The postoperative course was normal up to the eighth day when trismus and rigidity of the neck developed. Within the next twenty four hours the typical facial expression of tetanus appeared together with spasms of the facial and cervical muscles. With the onset of these symptoms intraspinal and intravenous treatment was instituted. As the spasms became more severe and more generalized they were combated with inhalations of chloroform. During the ensuing eleven days the condition gradually became worse and a fatal issue seemed inevitable. At this point an amputation through the middle of the leg was performed and antitoxin was injected into the nerves and applied to the wound which was left open. The next five days saw progressive improvement. An unexplained rise of temperature however led the surgeon to discontinue the injections of serum. The temperature fell to normal and uneventful recovery resulted.

ALBERT F DE GROAT M D

Dogliotti A. M.: Blood Transfusion in the Treatment of Surgical Infections (*La trasfusione di sangue nel trattamento delle infezioni chirurgiche*) *Arch Ital di chir* 1928 XLII 299

Dogliotti reviews twenty-eight cases which show that in most surgical and medical infections transfusion of blood is a most effective method of treatment because of its stimulating action on metabolism its beneficial effect on the secondary anemia the blood pressure and the circulation and its activation of the organic defenses against the bacteria. The most important subjective effects noted after transfusion are a feeling of relief a decrease in the general restlessness improvement of the appetite and a general feeling of well being. The objective signs are a lowering of the temperature curve (in some cases there is a temporary rise for the first few hours) improvement in the rate and strength of the pulse and of the respiration a decrease in the leucocyte count after about twenty four hours and a favorable reaction at the site of the infection within twenty four hours. Except in cases in which the infection is extremely virulent or the patient's general resistance is very greatly decreased the treatment brings about a progressive and permanent improvement with rapid resolution of the general and focal findings. The bactericidal and phagocytic power of the blood and to a less degree the opsonic power of the serum are increased. It is very probable that there is also improvement in the general activity of the cells and humors of the body

an index of which is furnished by the bactericidal power of the blood.

In connection with transfusion all the other therapeutic measures which are indicated in the case should be employed. Transfusion is a purely auxiliary treatment and does not contra-indicate the use of other therapeutic measures.

Only pure blood should be transfused. It should be given rapidly and with a proper technique. As a rule not more than from 200 to 300 c cm should be used. In very serious cases the transfusion should be repeated every twelve, twenty four or forty eight hours. In mild cases one transfusion is enough. If in some cases there are reasons why the transfusion cannot be repeated as much as 500 c cm may be given at once. In cases with very defective circulation and heart weakness or intense general intoxication it is advisable to withdraw an amount of blood equal to that which is to be transfused. In order to increase the efficacy of transfusion it is advisable or almost necessary to give large quantities of physiological salt solution subcutaneously or intravenously to increase the amount of circulating fluid stimulate the metabolism and furnish a vehicle for the toxic and septic products in the organism. Indirect transfusion is to be preferred as it gives the maximum independence between donor and recipient makes transfusion possible without surgical exposure of the vein and therefore with slight traumatism and allows repetition as often as necessary. Vernaz G Morgan MD

# PHYSICO-CHEMICAL METHODS IN SURGERY

## ROENTGENOLOGY

Bass F and Jaroschka K. Increasing Resistance Against Streptococcus Sepsis by Roentgen Irradiation Experiments on Animals (Resistenzsteigerung gegen Streptococcensepsis ist durch Roentgenstrahlen im Tierversuch) *Strahlentherapie* 1928 xviii 568

In experiments on rabbits the authors attempted to determine whether roentgen irradiation will protect against streptococcus sepsis. To prove that the rays act not by an effect on the coccus but by activating the organic defense the rays were applied in the first experiments before the animals were infected.

Local irradiation was chosen in order most closely to approximate the conditions in man.

The sepsis was produced by the intravenous injection of from 0.5 to 1.0 c.c. of a twenty-four hour ascites bouillon culture of streptococci. Normal animals succumbed to it within from one to four days.

The rays were centered on the middle third of the abdomen the rest of the body being covered. The irradiation was given from twelve to fourteen hours before the infection.

After the infection at equal intervals in the cases of both the irradiated and the control animals 1 c.c. of blood was withdrawn from the jugular vein and with fluid agar was poured onto a plate for counting of the micro organisms.

In these experiments it appeared that the preliminary irradiation considerably increased the resistance to the infection. Control animals succumbed to the sepsis in from one to four days whereas animals that had received preliminary irradiation survived for from five to fourteen days and did not show symptoms until three days before death.

Continuous counts of the micro organisms showed that in the irradiated animals the organisms disappeared rapidly from the blood stream. In the normal animals the initial decrease in the number of micro organisms was followed by a rapid and marked increase. In the blood of the irradiated animals the micro organisms were distinctly fewer and some times disappeared entirely.

The findings seemed to indicate that the increased resistance obtained was due to increased activity on the part of the reticulo endothelial apparatus similar to that occurring in immune animals.

Further investigations with Weil's plate tests of bactericidal power showed that the increase in resistance could not be ascribed to an increase in the bactericidal power of the serum.

To determine whether roentgen irradiation activates leucocytes in contact with the streptococci irradiation experiments with leucocytes *in vitro* were

undertaken. No appreciable difference in the phagocytic strength of irradiated and unirradiated leucocytes was noted.

It was found possible also to increase the resistance to infection of animals already infected. Animals infected by intravenous injection and irradiated five hours after the infection lived five or six days longer than control animals. In the normal animal almost all of the micro organisms had passed out of the blood stream into the reticulo endothelial apparatus at the end of five hours and after multiplying there re entered the blood stream in vastly increased numbers. In the immune animal the micro organisms were held fast and destroyed in the reticulo endothelium. The action of irradiation applied at a time when the micro organisms have been taken up by the reticulo endothelium is a general activation of the reticulo endothelial system.

Further experiments with the object of demonstrating increased activity of the reticulo endothelium with Adler and Reimann's function test gave no results.

An experiment which it was hoped would throw light on the action of the roentgen rays on the isolated circulating blood was also unsuccessful.

To determine the distant action of the rays on non irradiated cells a rabbit was irradiated as before (over the abdomen) and fourteen hours later 2 c.c. of a filtrate of a bouillon culture of streptococci were injected into the marrow of the tibia. Six hours later a streak preparation of the bone marrow was made and stained by the Giemsa Romanowsky method. A control experiment was carried out with a non irradiated animal. The result showed clearly more phagocytic activity of the histocytes and leucocytes in the irradiated animal than in the non irradiated animal. GRACERT (G)

Overgaard A P. Roentgenograms of the Sphenoid and Ethmoid Sinuses. The Oblique Method. *Arch Otolaryngol* 1928 viii 663

Although roentgenograms of the paranasal sinuses taken in the frontal position, Water's position and the lateral position yield a certain amount of information relative to the sphenoid and ethmoid sinuses they are unsatisfactory because of the inevitable superposition. Films made in the oblique position as described by Rhese in 1910 project these sinuses into the orbital cavity and permit separate visualization of each of them. A modification of this method used by the author is described in detail. The article contains roentgenograms of dry skulls with the sinuses filled with opaque material to show the location of the various sinuses. The value of stereoscopic exposures is emphasized.

ADOLPH HARTUNG M.D.



## RADIUM

Regaud G. Radium Therapy of Cancer at the Radium Institute of Paris. *Am J Roentgenol*, 1929 xxi 1

The author recognizes that radium and X ray therapy cannot be divorced from surgery in the treatment of cancer. However he discusses only radium therapy chiefly because of the rapid progress that has been made in this type of treatment as the result of a better understanding of cancer and the action of irradiation upon it. Increased experience in irradiation improvement in the technique and the greater quantity of radium available.

By cure the author means freedom from all evidence of disease for a reasonable length of time depending upon the location of the lesion. For example, three years in cancer of the skin and mouth, five years in cancer of the cervix, and ten years in cancer of the breast.

The statistics of the Radium Institute of Paris are based upon the total number of cases treated without reference to the technique employed, but the cases are carefully classified from the anatomical standpoint. Complete statistics are available for only cancer of the cervix, cancer of the skin, and cancer of the mouth.

The technique of radium therapy is of four types:

1. Intracavity irradiation, the introduction of radium into the natural cavities or channels of the body.

2. Interstitial irradiation, in which various radium preparations are introduced directly into the neoplasm.

3. Contact or surface irradiation, in which the radium is placed in contact with or a very short distance from the neoplasm.

4. Irradiation at a distance from the neoplasm and through the skin.

Intracavity irradiation has been practically abandoned except in cancer of the uterus. Its use in the treatment of cancer of the prostate, rectum, oesophagus, larynx, upper air passages, and alimentary tract has given poor results.

Of 678 cases of cancer of the cervix treated in the period from 1919 to 1926, 610 were used for statistical purposes. In this group a cure was obtained in 30 per cent. All were treated with radium or with radium and the X ray. The incidence of five year cure steadily increased from 8 per cent in 1919 to 26 per cent in 1922. Of the 171 patients in whom the lesion was in the early stages, 61 were free from disease for from one to nine years. A five year cure was obtained in 33.3 per cent. Of 192 borderline cases, 176 were used for statistics. In this group the treatment resulted in freedom from the disease for from one to nine years in 37.5 per cent and a five year cure in 25.8 per cent. Of the 407 advanced cases, 373 were used for statistics. In this group freedom from disease for from one to nine years was obtained in 21.7 per cent and the incidence of five year cure was 17.7 per cent.

By interstitial radium therapy combined with radium surgery is meant (1) the permanent introduction into the tissues of minute radon-containing capillary tubes made of glass, gold, or platinum, and (2) the temporary introduction of metallic needles, a procedure called radium puncture. The author believes that in the future radium needles will be used in preference to radon seeds whenever surgery is necessary to gain access to the neoplasm. Radium needles are small platinum tubes 10 mm in length with a wall thickness of from 0.5 to 2.0 mm. They are introduced by means of a trocar and stylet as practiced by Mallet. Those used at the Radium Institute of Paris have a wall thickness of 0.5 mm and hold end to end 1 or more cells 15 mm in length. They have a double eye accommodating 2 silk threads, one of which is used for suturing the needle to the skin or mucous membrane and the other of which is used for its removal. The dosage given by these needles varies between 0.5 and 0.7 mc destroyed per linear centimeter. These needles are easily manipulated, inserted directly into the tissues without the aid of a trocar, and readily spaced. All beta rays are filtered out by the platinum.

Cancers of the tongue and floor of the mouth are treated by radium puncture. Those of the anterior half of the dorsum and the border of the tongue yield more readily than those of the posterior half of the tongue and the floor of the mouth. In cases of the former type a complete cure has been obtained in 26.4 per cent and a cure of the primary lesion in 24 per cent. The primary lesion was therefore cured in 51 per cent. In cases of the latter type a complete cure has been obtained in 22 per cent and a cure of the primary lesion in 33.7 per cent. Accordingly a complete cure has been obtained in 24 per cent of the total number of cases of cancer of the tongue and the floor of the mouth and a cure of the primary lesion in 44 per cent. Only 20 per cent of the cases were operable when treated. In the treatment of malignant glands, radical block resection of the area is followed by radium therapy at a distance from the skin. Radium puncture is not employed.

Radium surgery to obtain easier access for the insertion of radium is practiced in the treatment of cancer of the nasal fossae and maxillary sinuses. A cure was obtained in 6 of 18 cases of these conditions.

Surface radium therapy has been supplanted by the placing of numerous radium bearing tubes of equal strength at a short distance from the lesion. By means of moulded applicators made of Columbia paste (beeswax, paraffin, and powdered wood), which are especially prepared in each instance, it is possible to maintain the proper distance between the radium and uneven surfaces of the body. In this type of treatment, platinum tubes with a wall thickness of from 0.5 to 1.0 mm, and containing from 10 to 20 mgm of radium element in tubes 15 mm in length are used. In 62 cases of operable cancer of the skin without cancerous adenopathy a

cure was obtained in 98 per cent, and in the total number of cases of operable cancer of the skin a cure was obtained in 92 per cent. In 22 cases of doubtful operability without cancerous adenopathy a cure of the primary lesion was obtained in 91 per cent and in the total number of cases of doubtful operability a cure was obtained in 72 per cent. In inoperable cases a cure was obtained in 14 per cent.

Cancers of medium depth such as those of the pharynx larynx cervical glands and inguinal glands are best treated by means of moulds holding the radium from 2 to 6 cm from the skin depending upon the depth of the area to be treated. In the Radium Institute of Paris radium tubes having a filtration of 1 mm. of platinum are fixed to the upper surface of the wax moulds which hold them in place. Not infrequently special moulds containing several decigrams of radium protected laterally by 5 or 6 mm. of lead and covering an area of from 100 to 200 sq. cm. are kept in place for from eight to ten days without causing much discomfort. When heavy moulds are used the applications are intermittent.

In radium therapy at a distance special applicators are used to hold from several hundred milligrams to 4 gm. of radium from 10 to 15 cm. from the skin. The applicator used at the Radium Institute of Paris carries 4 gm. of radium filtered by 1 mm. of platinum at a focal skin distance of 10 cm. and irradiates a surface of approximately 150 sq. cm. This apparatus is employed in the treatment of carcinoma of the cervix with extensive pelvic invasion. From 6 to 8 portals of entry are used and 100 per cent of the epidermical dose is delivered. The epidermical dose is defined as that amount of irradiation which is necessary and sufficient to destroy only the epidermis. The 4 gm. of radium in the applicator are distributed in 80 tubes each containing 50 mgm. The tubes are arranged in 4 groups of 20 each at the 4 angles of a flat rectangular box made of brass which measures 135 by 110 mm. In advanced cancer of the cervix from 50 to 60 hrs. of irradiation with this applicator through from 6 to 8 portals of entry are delivered over a period of from two to three weeks.

Careful comparisons of the biological effects of radium as compared with the X-ray have been made. The author believes that from the biological standpoint radium is superior to the X-ray. From the point of view of biology he draws the following conclusions:

1. Equal irradiation of the diseased area and filtration play an important part when homogeneous radiation is attempted.
2. It is preferable to use selected cytolethal radium therapy that is penetrating irradiation purified by filtration. Such irradiation is able to destroy radiosensitive cells without causing serious damage to normal structures.
3. The time of treatment should be prolonged to a definite limit.
4. If sublethal doses are applied at sufficient intervals over a long period of time normal tissues

are sensitized and cancer cells are immunized to irradiation.

5. The radiosensitivity of the basal cell layer of cancer cells should be utilized when the dose is planned since this layer is more sensitive than the generations which will follow.

The author states that much of the progress in the radiotherapy of cancer is attributable to recognition of the unequal radiosensitivity of different cancers the direct and indirect action of the rays and the superiority of the biological action of gamma rays over the X-ray.

The majority of epitheliomata arising from stratified epithelium are cured by irradiation therapy provided (1) the cancer has not been immunized by previous irradiation treatments (2) deep infection is absent (3) the lesion is not so deep and extensive as to necessitate the irradiation of too great an amount of diseased tissue which favors general radio intoxication and (4) the anatomical location of the tumor does not necessitate a severe irradiation reaction or permit visceral perforation.

Sterilization of laryngeal cancers is easily provided necrosis of the cartilaginous portion does not present a serious complication. Cancer of the oesophagus is so deep that its treatment is difficult. Epidermoid cancer easy of access is readily cured in the absence of local complications even when it is very extensive and frequently when it is inoperable. Epidermoid carcinoma of the cervix yields well while adenocarcinoma of the rectum is resistant to selective radiotherapy.

Biologically the problem of the direct and indirect effect of irradiation on cancer cells is complicated. The author favors the theory of the direct action of the rays upon the cells. While he admits that there may be additional indirect action from changes arising in the stroma he believes that the principal action is direct. He calls attention to the fact that in the irradiation of normal tissue histological changes cannot be noted in vessels connective tissues and leucocytes preceding an effect upon the cells. Epidermical dosage is a better criterion than erythema dosage as the former destroys the epidermal cells whereas the latter causes a functional phenomenon. It is believed that normal and neoplastic tissue undergo fundamentally the same processes under irradiation. The varying responses of different cancers are inherent in the different radiophysical properties of the neoplastic tissue.

In the summary of his article the author draws the following conclusions:

1. Progress can be judged only from statistics.
2. Cavity radium therapy cures with regularity only epidermoid cancer of the cervix which has not extended beyond the uterus.
3. Homogeneous irradiation by interstitial methods is best obtained by radium puncture with the use of removable platinum needles.
4. Surface radium therapy with the use of wax moulds gives excellent results in epithelioma of the skin.

5 The radiosensitivity of cancers varies from the susceptible epidermoid structures of the cervix to the resistant adenocarcinoma of the rectum

6 The essential phenomenon in treatment with irradiation is a direct action on the cancer cell

7 Gamma rays from radium are undoubtedly superior to the X rays from the biological standpoint

The article contains numerous tables and illustrations and a fairly extensive bibliography

A JAMES LARKIN, M D

### MISCELLANEOUS

Rollier A Sun Treatment of Peritonitis (*Die Sonnenbehandlung der Peritoniti*) *Extrapulmonale Tuberk* 1928 II 129

Tuberculous peritonitis is a secondary tuberculous manifestation. Hence its development indicates that the patient's immunity has been broken down and all possible means must be used to aid the body in its fight against the infection. Both local and general treatment are necessary. Heliotherapy at high altitudes is of more benefit than any other form of treatment. The exposure to the sunlight must be managed very carefully. Rollier proceeds very

slowly and cautiously and varies the treatment in the different forms of the condition. Most of his cases are of the chronic type. Some of them are of the exudative and some of the dry variety. Occasionally especially after operation there are suppurative or faecal fistulae which are extremely unpleasant and deleterious to the patient.

In addition to the sun treatment attention must be paid to the patient's nutrition. The diet should consist mainly of milk farinaceous foods easily digested vegetables and well cooked fruits. The digestion must be watched with great care.

In the period from 1922 to 1925 Rollier treated ninety five cases of tuberculous peritonitis. A cure was obtained in 64.5 per cent and improvement in 27 per cent. In 5.2 per cent the condition remained unchanged and in 5.1 per cent death resulted from such conditions as cardiac insufficiency phlebitis and cachexia. Fifteen of the patients had in addition to peritonitis pulmonary tuberculosis four intestinal tuberculosis six visceral or bone tuberculosis and six faecal fistulae. The average duration of treatment was from ten to twelve months. The longest time was three years. Rollier considers sun treatment the ideal therapy for tuberculous peritonitis.

KAPNIS (2)

## MISCELLANEOUS

### CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Waters G. A. Colston J. A. C. and Gay L. N.  
Colloidal Lead with Roentgen Therapy in  
Malignant Disease *J. Am. Med. Ass.* 1929 xci 14  
Ullmann H. J. Colloidal Lead and Irradiation in  
Cancer *J. Am. Med. Ass.* 1929 xcii 18

ULLMANN uses the colloidal lead phosphate in intravenous cancer therapy while WATERS COLSTON and GAY employ colloidal lead prepared after the method of Bell of England and Wood of New York City. The advantage of the lead phosphate solution is that it is more stable, easier to administer and less toxic.

WATERS COLSTON and GAY report the results of lead and roentgen therapy in seven cases of malignancy. Four of the patients are dead and three are dying. However, although in all of the cases the condition was very advanced, improvement was noted following the treatment. In one case a lung metastasis disappeared. In the majority of the cases there was stippling of the red blood cells following the irradiation and in a few lead lines were seen on the gums. In two cases peripheral neuritis developed.

ULLMANN gives no statistics but reports his general impressions from the treatment of fifty cases with colloidal lead and irradiation. All of the cases were so advanced that he regards it as unfair to attempt to evaluate the method by his results. He noted however that patients receiving this treatment required less morphine than untreated patients in the same condition. In many cases shrinkage, liquefaction or disappearance of the tumors was seen either during life or at autopsy.

CHARLES H. HEACOCK, M.D.

Souland A. Costolow W. E. and Meland O. N.  
Colloidal Lead Combined with X Rays and  
Radium in Treatment of Cancer *J. Am. Med. Ass.* 1929 xci 104

Knox L. C. Lead Therapy *J. Am. Med. Ass.* 1929 xcii 106

SOU LAND COSTLOW and MELAND report a series of thirty-one cases of inoperable carcinoma which were treated by the intravenous administration of colloidal lead phosphate at weekly intervals in doses of from 100 to 120 mgm. combined with roentgen or radium irradiation. The treatment had a temporary beneficial effect but the end results were not encouraging. The authors state that when the expense of the treatment is weighed against the possible good effects to be obtained ultimately, it appears that lead therapy is not the solution of the cancer problem.

KNOX reports that of forty patients with various types of malignant tumors who were treated with

colloidal lead with or without X ray irradiation four are at present wholly free from physical signs of their disease but the time which has elapsed since the disappearance of the tumors is too short to permit the assumption that a cure has been obtained. Several other patients were benefited temporarily. Thirty-four patients died as the result of the progress of the neoplasm or from an extraneous lesion. In a series of sixty other cases neither death nor serious complications resulted from the use of lead. In twenty cases the patient was so cachectic or the neoplasm so large that it was necessary to stop the use of lead before giving the amount which might have been expected to cause improvement. No selection of patients was made except that those who were moribund and those with advanced renal lesions were excluded. The combination of lead with the X ray was often found more effective than lead or the X ray alone.

The results in the cases reviewed confirm in a general way Bell's finding that in a few instances of inoperable and advanced lesions arrest of the disease may be obtained by the combined administration of lead and the X rays.

JOHN H. GARLOCK, M.D.

### SURGICAL PATHOLOGY AND DIAGNOSIS

Howes E. L. Sooy J. W. and Harvey S. C. The  
Healing of Wounds *J. Am. Med. Ass.* 1929 xcii 42

The fundamental process of the healing of wounds called cicatrization or fibrosis is only qualitatively familiar as methods of measurement and accurate data applicable to this problem are either not available or have not been employed. The empiric knowledge while perhaps sufficient for most purposes might well be rendered more precise and scientific if data could be obtained which could be subjected to mathematical analysis.

Attempts in a limited way have been made to obtain such data. Carrel in 1910 found that there is a quiescent period of from one to five days between the infliction of a surface wound and the beginning of the diminution in its area, that the diminution is caused by contraction of the granular bed and is soon overlapped by the decrease in size as a result of the ingrowth of epithelium from the edges of the wound, and that the larger the area the more rapid the repair. A reverse relationship exists as regards the epidermization, that is the smaller the wound the more rapid the ingrowth of epithelium.

Spam and Loeb in 1916 arrived at the same conclusion without knowledge of Carrel's work. Carrel and Hartmann then constructed graphs of the rate of the reparative process with the same general conclusion. Du Noyer working with Carrel devel-

oped a mathematical equation establishing a normal curve for the healing of a surface wound. Having established a curve representing the normal expectancy of healing, they studied the latent or quiescent period which in the dog lasts from five to seven days and then ends abruptly. The contraction period starts with a maximum velocity. As long as the wound has complete protection the latent period is prolonged whereas the introduction of irritants serves to increase it even below the normal time. Carrel came to the conclusion that the contraction phase is initiated by an external factor. Clark, using the curves and methods of Carrel and Du Nouy, found that a protein diet shortens the latent period and a fat diet lengthens it and that the rates of contraction and epidermization are unaffected by diet. Ebeling, using the same equation, found that in the alligator a rise of 10 degrees C. increases the rate of healing of wounds twofold.

The authors simplified the problem by eliminating the factor of epidermization. They produced incised wounds in the skin, fascia, stomach and intestine of dogs and sutured them immediately. At certain time intervals the tissue containing the wound was removed, the strength of the wound was determined and its tensile strength was tested on a Scott thread testing machine.

The experiment on skin, the sutures being removed before the test, showed that the tensile strength expressed in grams per centimeter width of the wound remained near zero for four days, then rapidly increased to 800 gm. and then gradually rose to the maximum strength of the wound in the skin, 1,600 gm., on about the fourteenth day.

In the experiment on fascia, which was sutured with No. 20 twenty day chromic catgut and No. 3 twenty day chromic catgut, the composite graph showed a quiescent period up to the fifth day during which the strength was that of the holding power of the sutures. The point at which the sutures tore out at the points of insertion was less than 700 gm. per centimeter of incision. The normal strength of the fascia wound, 1,400 gm., was reached at about the fourteenth day.

For the wound in the muscle, the sartorius of the dog was used because of its minimal and constant thickness. The wound edges were approximated with interrupted No. 000 plain catgut sutures. The quiescent period was about six days and the tearing strength of the suture very low. The normal strength of the muscle wound, 1,800 gm. per centimeter of incision, was reached on about the twelfth day.

In one group of experiments on the stomach, a simple incision through the anterior stomach wall

was closed with three layers of No. 000 plain catgut. It is known that catgut of this size disappears in forty eight hours. Consequently the strength during the quiescent period of three days was found to be zero. The normal strength of the stomach wall wound, 1,800 gm. per centimeter of incision, was reached on the twelfth day. In another group of experiments the incision was closed with No. 0 twenty day chromic catgut. During the quiescent period of from four to six days the strength was represented by the holding power of the sutures, 700 gm. per centimeter of incision, at which point they tore out of the tissues. The return to normal was neither so complete nor so rapid as in the preceding experiment as the average normal strength of the stomach wall wound was only 1,200 gm. per centimeter of incision on the twelfth day, suggesting that the presence of large amounts of suture material interferes with healing of the wound.

The authors state that the lag period has a practical significance as it is during this period of from four to six days that the strength of the wound must be artificially reinforced by the use of sutures. The period of fibroplasia is equally important for it is during this period that the strength of the wound is developed up to a maximum point at which it remains for some time. The rapid ascent of the curve from the sixth to the tenth day as expressed in tensile strength has great practical significance as regards the type of suture used and the stress placed on the wound.

The authors summarize the results of their experiments as follows:

1. It has been found possible to determine the rate of healing of the simple incised wound in the skin, fascia, muscles and stomach.
2. The tensile strength of a healing wound is a function of the fibroplastic process.
3. A curve expressing this shows a lag period of from four to six days and then a phase of fibroplasia rising rapidly at first and then more slowly as it approaches the maximal strength of the wound.
4. The latter point is attained in from ten to fourteen days.

In the discussion of this report, BARTLETT cited the work of Klumpski on the intestine after end-to-end anastomosis, which showed that the normal pressure the intestine will stand drops about half for about two days after the anastomosis and continues to drop until the seventh day when it gradually rises to normal on about the fifteenth day. Klumpski attributed the lack of holding power of the sutures to weakness of the granulation tissue that was deposited about the suture material.

J. EDWIN KIRKPATRICK, M.D.

# BIBLIOGRAPHY of CURRENT LITERATURE

NOTE.—THE BOLD FACE FIGURES IN BRACKETS AT THE RIGHT OF A REFERENCE INDICATE THE PAGE OF THIS ISSUE ON WHICH AN ABSTRACT OF THE ARTICLE REFERRED TO MAY BE FOUND

## SURGERY OF THE HEAD AND NECK

### Head

- Purulent accumulations in the temporal region. P M ABERNATHY Bol Soc de med e chirurg de S Paulo 1928 xii 255
- Cavernous haemangioma in the adult. G B NEW Surg Clin N Am 1929 ix 78
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oped a mathematical equation establishing a normal curve for the healing of a surface wound. Having established a curve representing the normal expectancy of healing they studied the latent or quiescent period which in the dog lasts from five to seven days and then ends abruptly. The contraction period starts with a maximum velocity. As long as the wound has complete protection the latent period is prolonged whereas the introduction of irritants serves to increase it even below the normal time. Carrel came to the conclusion that the contraction phase is initiated by an external factor. Clark using the curves and methods of Carrel and Du Noy found that a protein diet shortens the latent period and a fat diet lengthens it and that the rates of contraction and epidermization are unaffected by diet. Ebeling using the same equation found that in the alligator a rise of 10 degrees C. increases the rate of healing of wounds twofold.

The authors simplified the problem by eliminating the factor of epidermization. They produced incised wounds in the skin fascia stomach and intestine of dogs and sutured them immediately. At certain time intervals the tissue containing the wound was removed the strength of the wound was determined, and its tensile strength was tested on a Scott thread testing machine.

The experiment on skin the sutures being removed before the test showed that the tensile strength, expressed in grams per centimeter width of the wound remained near zero for four days then rapidly increased to 800 gm. and then gradually rose to the maximum strength of the wound in the skin 2 600 gm. on about the fourteenth day.

In the experiment on fascia which was sutured with No. 00 twenty day chromic catgut and No. 3 twenty day chromic catgut the composite graph showed a quiescent period up to the fifth day, during which the strength was that of the holding power of the sutures. The point at which the sutures tore out at the points of insertion was less than 100 gm. per centimeter of incision. The normal strength of the fascia wound 2 400 gm. was reached at about the fourteenth day.

For the wound in the muscle the sartorius of the dog was used because of its minimal and constant thickness. The wound edges were approximated with interrupted No. 000 plain catgut sutures. The quiescent period was about six days and the tearing strength of the suture very low. The normal strength of the muscle wound 1 800 gm. per centimeter of incision was reached on about the twelfth day.

In one group of experiments on the stomach a simple incision through the anterior stomach wall

was closed with three layers of No. 000 plain catgut. It is known that catgut of this size disappears in forty eight hours. Consequently the strength during the quiescent period of three days was found to be zero. The normal strength of the stomach wall wound 1 800 gm. per centimeter of incision was reached on the twelfth day. In another group of experiments the incision was closed with No. 0 twenty day chromic catgut. During the quiescent period of from four to six days the strength was represented by the holding power of the sutures 700 gm. per centimeter of incision at which point they tore out of the tissues. The return to normal was neither so complete nor so rapid as in the preceding experiment as the average normal strength of the stomach wall wound was only 1 200 gm. per centimeter of incision on the twelfth day suggesting that the presence of large amounts of suture material interferes with healing of the wound.

The authors state that the lag period has a practical significance as it is during this period of from four to six days that the strength of the wound must be artificially reinforced by the use of sutures. The period of fibroplasia is equally important for it is during this period that the strength of the wound is developed up to a maximum point at which it remains for some time. The rapid ascent of the curve from the sixth to the tenth day as expressed in tensile strength has great practical significance as regards the type of suture used and the stress placed on the wound.

The authors summarize the results of their experiments as follows:

- 1 It has been found possible to determine the rate of healing of the simple incised wound in the skin fascia muscles and stomach.
- 2 The tensile strength of a healing wound is a function of the fibroplastic process.
- 3 A curve expressing this shows a lag period of from four to six days and then a phase of fibroplasia rising rapidly at first and then more slowly as it approaches the maximal strength of the wound.
- 4 The latter point is attained in from ten to fourteen days.

In the discussion of this report BARTLETT cited the work of Klumpski on the intestine after end-to-end anastomosis which showed that the normal pressure the intestine will stand drops about half for about two days after the anastomosis and continues to drop until the seventh day when it gradually rises to normal on about the fifteenth day. Klumpski attributed the lack of holding power of the sutures to weakness of the granulation tissue that was deposited about the suture material.

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